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DISTRICT HEATING AGAIN

THE latest objective in the campaign for district heating is the capture, in combination with electricity supply, of the new towns. It is assumed that the Ministry will forswear its promise to the consumer of freedom of choice and that the complete supply of heat and electricity will be delivered over to a specially built generating station which will distribute the heat now wasted in the cooling towers to the industries and homes of the new town thus raising its thermal efficiency to 76% (as accurate as that) as against the 30% realisable in the condensing station. Mr. A. E. Margolis, DIPL.ING., set out the case with great ability and in considerable detail in a recent paper to the Institute of Fuel.

The case for district heating was well argued. 'The popular conception that district heating is economically justified in the U.S.A. with their hard winters, but not for our mild climatic conditions is without foundation; exactly the opposite is the case.' Calculated from the degree-day basis the annual load factor is shown to be more favourable in London than in New York. The claim that a centralised heat supply is already being provided by electricity or gas is shortly dismissed. The two are mostly lumped together. They are too expensive, consume greater quantities of fuel, undertakings are unable to cope with the demand—'they do not give the same degree of comfort and convenience as district heating.' If the electric heating load were as highly developed as in one case the total electricity generating capacity of the country would have to be doubled. It is admitted that storage facilities improve the position of gas and that new plant does not involve so large a capital expenditure as for electricity; 'but in the future an increase in the price of gas used for heating, due to extra capital charges for new plant, cannot be avoided.'

The case for the heat pump is dismissed—for the time being at any rate. Nothing is said of the combination of gas and coke.

The importance of doing something to improve the thermal efficiency of the electricity generating station is fully recognised. Its combination with the distribution of hot water is to be the solution. The lower limit of fuel consumption for the condensing station is now being approached. By raising the initial steam conditions to 2,000 lb./sq. in. and 1,050°F. and by re-superheating to 1,000°F. for three giant turbo-generators under construction in the U.S.A., it is hoped to obtain a thermal efficiency of 36.8% corresponding to a fuel consumption of 9,300 B.Th.U. per kWh generated. Any further increase in the thermal efficiency of a condensing station, stated the author, is hardly possible.

The difficulties to be faced in the further increase of generating capacity on condensing lines were described—the growing cost of fuel, and particularly the increasing difficulty of siting power stations in the neighbourhood of adequate water supplies. The combined heat-electric station solves the latter problem. The same water is circulated through the condensers and the heat distribution system. The difficulty experienced so far in the practical combination of the two systems lies in the divergent variations of the heat and power loads. The solution offered in the present paper is the provision of hot water accumulators, enabling heat and electricity outputs to be varied independently over a wide range, together with an air-blast cooler, brought into operation when the exhaust heat of the turbine, when satisfying the demand for electricity, is greater than the demand for heat. 'By this means any desired quantity of water can be cooled down and stored in the accumulator at a lower level than the heating water.' Thus, while the daily variations of the heating load are balanced by the hot-water accumulators, any increase of electricity demand over that which meets the heat demand is met by the operation of the air-blast coolers. The heating of the water would be varied by control of the back pressure of the turbines, a reduced back pressure in the daytime and at peak electricity load hours and an increased back pressure during the night and at off-peak hours.

The new town which is studied in some detail is one with a population of 40,000 with 10,000 houses, 1,000 flats, factories, schools, shops, offices, and public buildings. The basic figure for domestic requirements is 710

therms per house. Water for domestic and similar purposes is estimated on the basis of a daily supply of 15 gal. per head at 135°F. The capacity of the hot water accumulators, capable of supplying almost half the heat load under average climatic conditions and based on a temperature drop of 80°F. between flow and return and with 10% margin for expansion and dead space, would be 635,000 cu.ft. With initial steam at 1,500 lb./sq. in. and 850°F. and back pressure generally at 6 lb./sq. in. (absolute), 38,400 kWh capacity is needed giving an exhaust heat output of 9,000 B.Th.U./kWh. Three 20,000 kW generators would be installed, one as a standby.

Presumably the cooking and similar loads would be met by electricity. The estimated annual heat consumption is 1,144 × 10^9 B.Th.U. plus 20% losses, a total send-out of 1,697 × 10^9 B.Th.U., or, as we should say, 16,970,000 therms. And the estimated electricity available for sale per annum would be 192 mill. kWh, of which it is estimated that 188.5 mill. would be generated at the average exhaust heat output of 9,000 B.Th.U./kWh, while 15.5 mill. would be generated under condensing conditions, the balance being power for auxiliaries. Claiming an overall thermal efficiency of 76%, the total weight of coal at 11,500 B.Th.U./lb. consumed per annum would be 120,000 tons. It is further claimed that heat could be sold at 5d. per therm or 5s. 8d. per week to the average house, and electricity at 0.57d. per unit. 'At 50% of the annual heat supply and the same charge for electricity of 0.57d. per kWh the heat will have to be charged at 7.6d. per therm.' The average charge for electricity to the average house is not stated.

FREEDOM OF CHOICE

That, then, is the case. How can gas meet it?—or, rather, gas and coke? For a town of five times the size Dr. E. V. Evans (Institution of Gas Engineers. Comm. No.: 258) showed that 517,700 tons of coal could provide coal, coke, and 68 mill. units of electricity. So that roughly 105,000 tons of coal could do the work our way or at least to the point at which 50% of all domestic consumers have dispensed entirely with solid fuel, and at which 138,600 tons of coal is still used raw, or about 27,700 tons in the town of 40,000 inhabitants. But there is a great difference between Mr. Margolis's town and that of Dr. Evans. Mr. Margolis pre-supposes that every house, factory and other building would be coupled up to his supply with no alternative whatever. Dr. Evans, while assuming that 100% of his domestic consumers have become convinced of the immense relief from dirt and labour in the abandonment of solid fuel, still leaves them a supply of electricity for the smaller amenities—lighting, the small power requirements, the radio and so on—and still leaves the industrialist with a supply of raw coal for his own purposes. 'Atmospheric pollution by smoke has been reduced to a point at which it is no longer a serious nuisance. Sulphur-dioxide emission is confined mainly to industrial premises where the problem can be tackled by treatment of waste gases. Transport problems of solid fuel and the costs of ash removal are both eased to the point at which they no longer hamper the life of the town.'

And there does remain the freedom of choice, a freedom the denial of which is not confined to the utopian town of Mr. Margolis. The Electricity Authority is still practically cutting out gas to the new housing estates by providing services and wiring free of charge, while in some areas at least gas undertakings are charging the cost of services. Builders are naturally resisting this charge. It is high time that this question was taken up at the highest level, for already the sales of gas appliances, hampered as they are by the purchase tax, are falling off because the tenants of the new houses are being denied a gas supply. Either the gas boards must put the cost of services on to the price of gas, as the Electricity Authority puts it on the price of electricity, or both utilities must agree to charge a fair price for them.

LOCAL CONTACTS

ONE of the first duties of the Gas Consultative Councils was to appoint divisional or district committees. Most if not all of the councils have now completed the setting up of this part of their machinery, and its 'running in' will be watched with interest. The consultative councils—themselves an entirely new feature of the nationalised industry—are required by law to make an annual report to the area boards, and as the appointment of the local committees is obligatory under the Act they will presumably have to give some account of their activities although, in practice, they appear to have no duties beyond helping consumers to settle their individual differences and/or transmitting those differences to the consultative council. Each consultative council has been responsible for its own scheme, but all the councils are on broadly similar lines, with the chairman and deputy chairman of the council as *ex officio* members of all the divisional committees, and the secretary—where there is one—as secretary of them all.

The Eastern Gas Consultative Council is unique in that its Chairman, Alderman R. Turner, after a lifetime in the service of industry, has made himself responsible (with the aid of a personal assistant) for all the routine work of the council, and at last week's meeting he promised that either he or his assistant or both would attend the meetings of all the five divisional committees, pending the appointment of a secretary. Full lists of the members of the divisional committees, of whom there are about 12 on each in addition to the *ex officio* members, are, in the case of the eastern area, to be displayed in the gas offices and showrooms in each division. A few weeks ago the North Thames Gas Consultative Council decided—after hearing that the area board was unwilling to show more than the names of the chairmen and deputy chairmen in the showrooms and offices—to display full lists in public buildings. Earlier still, the Southern Gas Consultative Council had decided to give its lists as little publicity as possible. Assuming that the gas industry as a whole continues to give anything approaching the standard of service for which it was famed in pre-nationalisation days the divisional committees should find very little to do. The fact that in the eastern area they are to meet only once a quarter is some indication of the small amount of work expected.

ENTERPRISE REWARDED

THE speech of Dr. Harold Hartley, Chairman of Radiation Ltd., at the firm's annual general meeting on Thursday last—a report of which will be found in this issue of the *Journal*—was exceedingly encouraging, a bright spot indeed amid the greyness of current economic conditions. Radiation has both anticipated and has faced up to changed and changing circumstances, and the gas industry and the gas consumer gains as a result of the policy adopted by the firm and defined in outline clearly by its Chairman. In 1949 it was decided, in the interest of economic production, to effect specialisation in any one factory. As a first step it was arranged that the firm's works at Warrington should concentrate solely on the manufacture of a new domestic gas cooker designed for the low-cost market and for housing schemes, the while being a quality appliance of robust construction. In anticipation of substantial orders low prices were quoted, and in the event contracts have been concluded with the area gas boards which, in Dr. Hartley's words, 'should keep the operatives lucratively employed.' As a result of this specialisation, improvements followed to such an extent that works costs became lower than were expected, and, with a large turnover at a small rate of profit, Radiation was able to reduce the price of the cookers at the beginning of this year. The prices now charged do not exceed by more than 50% the prices which would have been charged in 1938. Apart from price, there is the question of the performance of the new cookers in use. With them it is possible, we are assured, to save 15 to 20% of gas when compared with the best cookers available in 1938-39, and Dr. Hartley pointed out that when they are used to replace some of the very old cookers still in existence economies of up to 50% in the gas used may be expected. The policy of specialisation on the lines indicated has proved itself, and it is being extended.

Another interesting matter touched on by Dr. Hartley in his speech concerned re-organisation of the sales side of the company. As a corollary to specialisation in manufacture it was decided towards the end of 1949 to register a new selling company, to which the name Radiation Group Sales, Ltd., has been given. The control of the selling arrangements for domestic gas appliances since the start of 1950 has been unified; the selling activities of the subsidiary companies have been co-ordinated by this central organisation. The new organisation is based on the geographical divisions selected for the area boards; and Dr. Hartley maintained that this plan is providing a better service for the area boards, and, through them, a better service for the users of Radiation appliances. Here again simplification has effected economy; and it is proposed to introduce unified selling arrangements in other fields as and when specialisation in manufacture is extended.

We have mentioned here two aspects only of Dr. Hartley's statement last Thursday. His account of the year's work of his firm is one which by and large is indicative of vigorous method in the overcoming of difficulties, of determined policy in spite of external handicaps, of an enlightened outlook not merely in terms of output of appliances in circumstances which present so many limitations, but in human relationships in the conduct of a large organisation directed, impelled, and guided by private enterprise. We take it that the speeches of company chairmen have as first consideration the inspiring of confidence. We assume that Dr. Hartley's speech had this approach. We feel certain that, in fact, it inspired confidence in his hearers and will be welcomed by the gas industry. If one could have reason for hopes of early concessions in purchase tax on such essentials as gas water heaters and space heaters, then the prospect would be bright indeed. As it is, there is obviously no cause whatever for pessimism regarding the activities of Radiation Ltd., in 1950 on behalf of the gas industry and in the rightful consolidation and advancement of its own interests.

CAPITAL INVESTMENT

THE Economic Survey for 1950, which was presented to Parliament last week by Sir Stafford Cripps, comments that the steps taken in 1949 to reduce the volume of capital investment will not be fully effective until the end of this year. It is believed that the stoppage of building or the construction of plant and machinery on which work has begun would be wasteful and disruptive, and in consequence capital expenditure this year will exceed the rate to which it is hoped to reduce investment in the second half of the year. Thus, in turning to the programme for the gas industry we find that a sum of £32 mill. has been allocated, of which £26 mill. will be spent on extensions and renewals and £6 mill. on repairs and maintenance. This compares with an investment programme of £30 mill. in 1949, a year in which 'the chief objects of capital expenditure were to overtake arrears of maintenance and plant renewal and to meet steadily increasing demand.' The survey reports an increase of 5% in the industry's total manufacturing capacity last year and a consumption of 25.3 mill. tons of coal, compared with 24.4 mill. tons in 1948. Nationalisation of the industry, it is stated, has enabled investment plans to be reviewed and co-ordinated so as to produce greater efficiency. There follows the ominous, but not unexpected, sentence: 'Plans for substantial expansion have however had to be postponed.' This statement is not in any way elaborated and the position is left as vague as when Sir Stafford Cripps first declared his intention, in November last, to cut the fuel and power investment programmes by some £25 mill. We assume that the brake will be applied to large measures of integrating supply.

Of the other fuel industries, investment in coal industry will be increased by £4.9 mill. over 1949 to £34.9 mill. This provides for increased expenditure on new mines and reconstruction, both to expand the total output of certain areas and also to maintain output as uneconomic pits are closed. Approximately three-quarters of the expenditure will be on plant and machinery; more efficient equipment and methods of working are being introduced to increase output, reduce costs, and improve working conditions, the latter being most important in view of the survey's anticipation of a loss of 26,000 miners by the end of this year. Total production of coal in 1950 is estimated at between 218 and 223 mill. tons.

In accordance with the Government's decision last

autumn investment economies have been made at the expense of electricity, the programme for which has been reduced from £104.1 mill. last year to £102 mill. Expenditure on new generating plant has been increased from £48.5 mill. to £54 mill., but, states the survey, 'even so, the increase will not yield sufficient capacity to close the gap between available capacity and peak demand as quickly as was hoped last year, and if demand continues to grow as rapidly as in the past there is likely to be a deficit of capacity in relation to the winter peak load for several years.' The position of electricity distribution and maintenance is worse; only £43 mill. will be spent compared with £50.6 mill. last year, a drastic slowing down which will curtail extensively the rate at which new connections can be made and schemes of rural electrification can be implemented. In contrast to this, and bearing in mind the Government's determination to reduce capital investment, the programme for the gas industry does not occasion dismay. It does not, of course, permit that degree of expansion which is desirable in the interests of the community and which has been so long awaited in many of the industry's areas. It is, however, to be hoped that the restrictions imposed will be offset by a determined spirit of unity and purpose.

POLITICS AND INDUSTRY

THE fuel industries, apart from oil, which is international in scope and extremely strong politically—in fact a world force—are now nationalised in this country. Nationalisation of the fuel industries was inevitable, but it would be wise for gas engineers and managers to give thought to the obvious fact that, under nationalisation, no industry can be non-political. Every move under nationalisation either smells sweet or just stinks, according to political faith and fervour. The British Association of Chemists is in another category. According to Dr. Herbert Levinstein, President of the Association, speaking at the London section's dinner last Friday, the Association is entirely non-political. We wonder how long this aloofness from world affairs will last. Sir Robert Robinson, President of the Royal Society, argued that any body of scientists in stature similar to that of the British Association of Chemists, should have 'considerable political influence.' How can any body have 'considerable political influence' without avowed political views?

STEEL—FROM STRENGTH TO STRENGTH

THE current issue of *Steel News*, published by the British Iron and Steel Federation, records an all-time steel production record for Britain in February. During that month steel was being made at an annual rate of 16,898,000 tons—nearly half-a-million tons more than the previous record rate of 16,409,000 tons set up in May, 1949. This, of course, follows the notable achievement in January, when not only were all records for that month broken, but more steel was made during the last week than ever before in a single week. Although first place is given to this announcement in the bulletin, it is not necessarily the most important item in the issue. Figures are also quoted which show that significant economies in the consumption of coal were achieved by the steel industry during 1949. The amount of coal used per ton of steel was reduced from 39½ cwt. in 1948 to 37 cwt. last year; in spite of a 5% increase in steel output in 1949 compared with 1948, less fuel was used, an achievement all the more striking in view of the recent deterioration in the quality of coal. Among the methods by which fuel has been and is being increasingly saved by the steel industry are listed the improved design and efficiency of coke ovens, a greater use of instrumentation, and the rapid extension of mechanical handling. *Steel News* rightly points out that this progress, which is a co-operative effort by management, workpeople, and the designers and builders of plant, has played no small part in keeping the price of steel well below world levels.

COMING-OF-AGE

THE National Smoke Abatement Society is this year celebrating its coming-of-age, and the spring issue of *Smokeless Air* is the first of two numbers featuring the event in a special way. The current issue, which we have before us, surveys the progress the Society has made since 1929 in building up an organisation that has succeeded in making the problem of smoke recognised as one of high national importance. The Society was born in Buxton 21 years ago when amalgamation was effected between the Coal Smoke Abatement Society, of London, and the Smoke Abatement League of Great Britain, which worked from Manchester. The former body was formed in 1899, the latter in Sheffield in 1909. In 1937 the headquarters of the National Smoke Abatement Society were moved from Manchester to London. Progress was made till 1939 darkened the scene. But from 1942 onwards interest began to be re-awakened and in many respects soon exceeded the pre-war level. The annual income recovered from its wartime drop just in time to make it possible to meet the new situation without visible embarrassment. One way in which the success of the Society's work can be seen is in the rise in the number of local authorities interested enough in smoke abatement to subscribe to it. In 1928—affiliated to the League—they numbered less than 40. Today there are nearly 400. Despite the ever-present frustration of the almost empty pocket (the gross income is not meeting expenditure; last year the deficit was £700), the Society, as we have indicated, has put smoke abatement on the map as a problem of national importance, of both social and economic significance.

THE WEEKLY WASH

FOLLOWING immediately the special report on domestic hot water supply in Great Britain, which was reviewed in these pages last week, the Ministry of Works has published an inquiry into Communal Laundry Facilities (H.M. Stationery Office, 1s.). This reports that although there has been a decided trend during the past 30 years for laundry work to be taken over by commercial laundries, most washing is still done by the housewife, usually for economic reasons. The report estimates that 95% of all households wash women's wear at home, 81% wash men's wear, and 40% send sheets to the laundry. Only a small proportion, 2%, all from the lower income groups, make use of public washhouses. Conditions for home laundry, particularly in the nine million houses built before 1914, are often unsatisfactory. Although more types of labour saving equipment are available, supplies are restricted and the cost, especially of washing machines, drying cabinets, and ironing machines, is beyond the means of most housewives. Nor indeed in many houses is there the room to accommodate such equipment. The report concludes that 'for some considerable time the only possible way to provide worth-while labour-saving equipment and the necessary supplies of hot water, electricity or gas for the majority of the housewives who do their own washing, will be to do so as a communal service. To provide such facilities for each individual dwelling would, under present conditions, be too costly both in money and materials.' A capital cost of £15 per dwelling served for the mechanical equipment of a communal laundry, fitted with washing machines, hydro-extractors and individual quick-drying cabinets, is compared with a cost of at least £40 per dwelling for similar facilities in each individual house, excluding washing machines and hydro-extractors. And the saving of fuel is also mentioned. In our opinion, the report is both idealistic and dangerous; idealistic in that it disregards the very real prejudice against the use of communal facilities, and dangerous in that it may foster an attitude of mind which will find in the communal laundry a ready excuse for avoiding the improvements necessary in so many houses. The aim should be to provide the widest possible choice for the housewife—adequate facilities and economic equipment in the home, an efficient commercial laundry service, and communal laundries where the need has been expressed.

THE JUNIOR ASSOCIATIONS

THE British Junior Gas Associations cannot complain of neglect from top level during the current session. We have published and commented on in the *Journal* the addresses by Mr. G. E. Currier, Deputy Chairman of the North Eastern Gas Board, to the Yorkshire Juniors; by Sir Alexander Clow, Chairman of the Scottish Gas Board, to the Scottish Juniors; Mr. E. Crowther, Chairman of the Northern Gas Board, to the Northern Juniors; Mr. C. H. Chester, Chairman of the South Western Gas Board and President of the Institution of Gas Engineers, to the Manchester Juniors. Today we give an address by Mr. J. H. Dyde, Deputy Chairman of the Eastern Gas Association, this address being also to the Scottish Association. The good will of the boards to the various associations was expressed by every speaker, and both Mr. Crowther and Mr. Chester asked for the exercise of tolerance and patience, emphasising the fact that no area board can help or formulate plans without first collecting and correlating full information about every constituent gas undertaking. Mr. Dyde spoke particularly of the relationship between the affiliated junior organisations and the Institution of Gas Engineers, and his views about the future of these organisations under the nationalised structure are without ambiguity. He suggested that the enthusiasm among the junior associations should not be diminished by the changes taking place in the industry today, but that it may well have to be redirected. The word 'Junior,' he argued, is a misnomer. A chief technical officer, he continued, was frequently not a member of the Senior Association because his manager had that privilege, and he operated with the Juniors. Now we find the extraordinary position that many so-called Juniors are holding highly responsible appointments within area board organisations. Their real place, maintained Mr. Dyde, should be as full members of the proposed new District Sections of the Institution of Gas Engineers. His opinion about the future was put forward at the end of his address. He feels that the Senior and Junior Associations should merge in the new District Sections, and that the District Section would take on the responsibility for the direction and training of its student members, who would be juniors in the strict sense of the word. Alternatively, Mr. Dyde suggested that in areas where the present associations, Senior and Junior, cover a large numerical membership, the Juniors could continue affiliation to the District Sections, retaining as it were their sovereignty, but pruning their membership so that it conforms more nearly to a junior or student technical body.

Obituary

Mr. **Peter Blair,** former representative in the North West of Parkinson and Cowan (Gas Meters), Ltd., died on March 28 at the age of 68, after an illness of several months. He retired from active duty with the Parkinson and Cowan organisation at the end of 1946, having served them for 34 years. News of his passing will be received with much regret by a large circle of friends in the gas industry among whom he was highly respected. The interment was at Helensburgh on March 31, and a memorial service was held on that day at Trinity Church, Bowdon, Cheshire.

The Professional Engineers' Appointments Bureau, 9, Victoria Street, Westminster, S.W.1, reports that the number of notifications of vacancies received during 1949 compared favourably with the number received during the previous four years, the actual total being 1,131, of which 332 were essentially for civil engineers, 513 for mechanical engineers, and 286 for electrical engineers. The average number on the register was 462 compared with 559 during 1948. This reduced number resulted in the engineers, in general, having a satisfactory number of nominations, but it correspondingly increased the Bureau's difficulty in selecting men so closely conforming to the specifications of vacancies received as in previous years. The greatest demand for engineers overseas again came from tropical countries, especially the Persian Gulf, India, Pakistan, and the Far East. As in previous years, the advisory services of the Bureau were utilised extensively by registered engineers and employers on a wide variety of subjects relating to employment.

Letter to the Editor

ECONOMICS OF GAS PRODUCTION

DEAR SIR,—The discussion in your columns on the above subject is interesting and I would like to offer a suggestion regarding the term 'throughput' as applied to vertical retorts. This is usually stated as so many tons of coal, but may give rise to misconception at least by the uninitiated, if due regard is not paid to the other component in throughput—namely, steam. Steaming practice is not so uniform as to be dismissed as a negligible factor, and I prefer the conception that throughput should be stated as 'x tons coal + y tons steam.'

Our other very old friend 'gas made per ton' might be none the worse of an occasional check up by using as divisor coal plus steam, so as to give a result expressed as 'gas made per ton of coal and steam.' Steam by itself is a relatively cheap gas-making material, but its real cost in the case of vertical retorts is somewhat obscure owing to (1) the coke required to complete the reaction, (2) the fuel consumed externally to maintain the reaction temperature, and (3) the reduction in thermal output per unit of plant which follows the substitution of steam for coal.

On this last point, (3) above, I can confirm Mr. Hawthorn's experience and feel sure there will be general agreement that it is easier to obtain a high thermal yield per unit of plant when the emphasis is on coal throughput rather than on steam throughput. It would therefore be interesting to learn the reasons for the contrary opinion expressed in your Editorial of March 1.

Yours faithfully,
GEORGE E. H. KEILLOR,
District Engineer and Manager.

Gasworks, Mill Street, Airdrie.
March 27, 1950.

100 YEARS AGO

Alas, Poor Yorick!

A morbid find in the retort house, such as is illustrated below, might have been a common occurrence if the suggestions of a Parisian chemist had been widely adopted. The *Journal* for April, 1850, reported in its Register of New Patents, that a certain Florentine Joseph De Cavaillon proposed to mix a number of curious ingredients with the coal employed for the purposes of carbonisation. These included bones, suet, oleaginous seeds, spent bark, and sawdust which had been

Line Drawing by G. W. Battison.

used in the purification of oils, or any fatty or oily waste. These substances were to be moistened with molasses or empyreumatic oil, and mixed with coal; after which the whole would be shovelled into ordinary gas retorts. The resulting products were impressive: Carburetted hydrogen gas of a highly illuminating power, animal charcoal, animal and vegetable charcoal in powder which might be applied in the preparation of manure, empyreumatic oil, and rich ammoniacal liquors.

1950 'Journal' Directory

The following changes have been notified during the past month. To keep the information in the 1950 edition of the *Gas Journal Calendar and Directory* up to date readers are advised to note these alterations (together with the appropriate adjustments relating thereto in the 'Personnel' section, pp. 135-148a):—

Page 21.—EASTERN GAS CONSULTATIVE COUNCIL: Add Councillor W. Hughes (Little Hadham) and Councillor R. N. E. Hinton (Watford), *Members.*

„ 29.—NOTTS AND DERBY DIVISION: K. L. Pearce, *Divisional General Manager,* vice B. A. Mallender, retired.

„ 46.—BINGLEY: Delete J. B. Balmforth, *E & M,* retired.

„ 57.—NORTH WESTERN GAS BOARD: C. W. Smettem, *Assistant Secretary,* becomes *Legal Officer.*

„ 62.—WIDNES: Delete C. E. Dickinson, *M,* retired.

„ 64.—SOUTHPORT: T/N changed to 55651.

„ 102.—PONTYPRIDD: T/N Pontypridd (not Treforest) 2152.

„ 110.—UTTOXETER: Delete G. Surtees, *E, M & S* (deceased).

„ 111.—WALSALL AND DISTRICT DIVISION: *Head Office,* Walsall Factory Estate, Tame Bridge, West Bromwich Road, Walsall. T/N Walsall 6431-4.

„ 119.—NORTH BERWICK: Delete R. J. Philp, *E & M,* retired.

„ 171.—INSTITUTION OF GAS ENGINEERS: *Offices and Library,* 17, Grosvenor Crescent, S.W.1.

„ 183.—MINISTRY OF FUEL AND POWER: The Rt. Hon. P. J. Noel-Baker, M.P., *Minister,* vice the Rt. Hon. H. T. N. Gaitskell, C.B.E., M.P., R. N. Quirk (*Gas*), vice R. Kelf-Cohen; R. Kelf-Cohen (*Petroleum Home*), vice R. N. Quirk, *Under-Secretaries.*

Diary

April 7 (Good Friday).—North British Association of Gas Managers: Spring Meeting, Ardrossan.

April 14.—Institution of Chemical Engineers: 28th Annual Corporate Meeting, May Fair Hotel, Berkeley Street, London, W.1, 11 a.m. Annual Dinner, Ball Room, 7 for 7.30 p.m.

April 14.—London and Southern Junior Gas Association: 'The Application of Electrical Equipment in the Manufacture and Distribution of Gas,' H. F. Buxton, B.SC. Lecture Theatre, North Thames Gas Board, 178/180, Edgware Road, London, W.2, 7 p.m.

April 14.—Scottish Junior Gas Association (Western District): Annual General Meeting. Royal Technical College, Glasgow, 5.30 p.m.

April 18.—Midland Junior Gas Association: Annual General Meeting. Birmingham.

April 19.—Manchester District Junior Association of Gas Engineers: Joint Meeting with Yorkshire Junior Gas Association. Visit to Clayton Son & Co., Ltd., Leeds. Papers, 'The Design, Construction, and Maintenance of Gasholders of all Types.' Leeds.

April 20.—Midland Association of Gas Engineers and Managers: Luncheon, 12.45 p.m.; Annual General Meeting, 2.30 p.m. Queen's Hotel, Birmingham.

April 20.—Scottish Junior Gas Association (Western District): Evening Visit to Mossend Works, Fertiliser Section, Imperial Chemical Industries, Ltd.

April 21.—London and Southern Junior Gas Association: Reception and Dance.

April 22.—Western Junior Gas Association: Annual General Meeting. Bath.

April 22.—Eastern Junior Gas Association: 'The Drying-out and Lighting-up of Vertical Retort Installations,' A. D. Duxbury. Bishops Stortford.

April 25.—Southern Association of Gas Engineers and Managers (Eastern District): 'Works Accident Prevention,' F. A. Sanders. Gas Industry House, 2.30 p.m.

April 25.—Wales and Monmouthshire Junior Gas Association: Annual Meeting. Film (and discussion) presented by Vacuum Oil Co., Ltd. Porthcawl.

April 26—London and Southern Junior Gas Association: All-day Visit to gasworks and industrial works at Reading.

April 27.—Midland Junior Gas Association: President's Day. Oxford.

April 27.—Institute of Fuel: Annual General Meeting, Connaught Rooms, Great Queen Street, 11 a.m. Presidential Address of Dr. D. T. A. Townend. Annual Luncheon, 1 p.m.; principal guest and speaker, Sir Harold Brown, G.B.E., K.C.B., Chairman, Fuel Research Board.

April 28.—Manchester District Association of Gas Engineers: Meeting, Engineers' Club, Manchester. Presidential Address of N. G. Appleyard.

May 4-5.—Eastern Association of Gas Engineers and Managers: Spring Meeting, Felixstowe.

May 18-19.—Wales and Monmouthshire Association of Gas Engineers and Managers: 45th Annual Meeting, Tenby. (First day social functions; second day business).

May 23.—Southern Association of Gas Engineers and Managers: Spring General Meeting. 'Forty Years of Reinforced Concrete with Special Reference to Recent Developments,' E. O. Rose (Divisional Engineer) and W. T. Gedge (Divisional Constructional Engineer, Tottenham Division, Eastern Gas Board. Connaught Rooms, London.

PAYMENT FOR INVENTIONS

Through the kind courtesy of the Honorary Editor, Mr. J. H. W. Turner, we have been receiving for some time the *Journal* of the Engineers' Guild (not to be confused with the Gas Engineers' National Guild); and we have been impressed by a short, lucid article in the current issue, by a 'Chartered Patent Agent,' discussing the position of an employer, *vis-à-vis* an employee, where patentable inventions are concerned.

The author points out that in many cases it is part of the duties of an employee to invent without expecting additional payment. The employer is then beneficially entitled to the invention whether or not the employee is bound by any form of agreement. Under the present law the patent application must include the inventor as an applicant and under the new law coming into force in 1950 the inventor must consent to the application. This does not alter the ultimate position, since if the employer is beneficially entitled to the invention he may call upon the employee to assign his rights.

'Chartered Patent Agent' goes on to say that if the employee has entered into a written agreement with his employer under which the rights in any invention made by the employee during his term of service are expressly laid down, subsequent difficulties as to ownership seldom arise. The scope of a man's duties is sometimes evident by reason of the department or departments in which he is to work—*e.g.,* experimental, research, development, or design. 'There is little doubt that, even in the absence of a written agreement, inventions on the subject of their research made by employees in such departments will be the property of their employers. There are instances, however, where the purposes for which a man is employed are of a much more general character—*e.g.,* directors, general or maintenance engineers, and salesmen. In such cases the main basis to bear in mind is that if a man, while engaged in his employer's business, is confronted with a problem connected with his work, and, in solving that problem, makes a patentable invention, the invention will be the property of the employer.'

There is another aspect. If the invention is in respect of something which has nothing to do with the work upon which the employer is engaged, a claim by the employer to any right in the invention may fail. This, states the author of the article from which we quote, might not apply were the invention made in the employer's time and with the assistance of his tools and materials. If an employee wishes to retain his rights in an independent invention it is certainly very unwise for him to develop it in this way, either with or without the employer's concurrence.

Broadly, it would be wise for engineers to assume that, in the absence of any written agreement expressly providing to the contrary, an invention made by an employee will be the property of his employer. Again as a broad guide, any employee who has made an invention should take professional advice as to what, in fact, may be the employer's rights in the matter.

Gas Manager Wins Compensation Claim

Gas Arbitration Tribunal's First Decision

ALLEGING that his former employer, a gas company, had entered into an 'improvident agreement' with its general manager, a gas board sought to disclaim liability for meeting a claim made by him for payment of a pension and compensation for loss of office in accordance with the terms of the agreement. On the advice of, and with legal assistance provided by the National Association of Local Government Officers, the question was submitted to the Gas Arbitration Tribunal, which revoked a notice of disclaimer given him by the board.

The case arose from a clause in an agreement made between the gas company and its newly appointed manager in December, 1945. The manager contended that this agreement was only the formal embodiment of the terms under which he had been orally appointed general manager of the company on October 31, 1945, one of those terms being that the agreement should follow that of his predecessor. The agreement stated that in the event of the transfer of the undertaking to any other authority or of any amalgamation or working agreement for financial control by some other authority or company or of any other arrangement whereby the then existing status of the board of directors of the company should become affected, the manager would be entitled to retire from the service of the company and that (a) he would be entitled to receive a pension calculated on his salary on retirement or upon the sum of £2,500 whichever should be the lower, based on his period of service with the company in addition to a period of 20 years representing his previous service with local authorities; and (b) that the company would pay him, as compensation for loss of office, a sum representing the maximum annuity payable to a specially qualified person for loss of office in accordance with the Local Government Act, 1933, on his remuneration and emoluments at the time of retirement, less half the pension paid to him. The annuity was to be calculated in accordance with the regulations made by the Treasury under the Pensions Commutation Act, 1871-82.

Advised by Nalgo

On April 29, 1949, the manager gave notice both to the company and to the board of his intention to retire and to claim pension and compensation for loss of office in accordance with the terms of his agreement. In a letter dated May 3, 1949, the board's solicitors replied giving him notice that the board disclaimed the agreement under Section 22 of the Gas Act, 1948. On the advice of the legal department of Nalgo, the manager refused to accept this disclaimer and the question was submitted to the Gas Arbitration Tribunal for settlement.

When the case came before the Tribunal, comprising Sir John Howard (Chairman), Mr. Edgar Ellen, and Sir Frederick Alban, the main submission put forward by the board was a contention that the agreement, having been made after November 19, 1945—the day when Mr. Herbert Morrison, the Lord President of the Council, had stated in the House of Commons that the Government intended to introduce measures to bring under national ownership the electricity and gas supply industries—was not reasonably necessary for the purposes of the activities of the gas company and that it was entered into with an unreasonable lack of prudence on the part of the company.

The statement, in addition to announcing the Government's intention to nationalise the service, asserted that during the interval which would be necessary before plans could be presented to Parliament and carried into effect all necessary development in the industries concerned must proceed; promised that progressive undertakings would not be prejudiced if they continued to develop in the interim period; indicated that compensation payable would have regard to any extent to which an undertaking had not been maintained up to the time of transfer, and advised that the Government would naturally take precautions in its legislation to protect the acquiring authority against any transactions entered into in the interim period, whether by way of contract or otherwise, which might prejudice the authority.

Warning Not Heeded

The board argued that the Lord President's utterance was a clear warning to gas undertakings that they should watch their step and not enter into improvident agreements. It maintained that the agreement under dispute was improvident, and, in support of this point, drew the attention of the Tribunal to the very large sum to which the manager would become entitled after only three-and-a-half years of service with the company. On exercising his option to retire, the manager would, on his interpretation of the agreement, be entitled to an annuity of £2,862 or, in the alternative, a capital sum of £42,494.

Counsel for the board further maintained that, in view of Mr. Morrison's statement, the company should have had regard to the fact that the gas industry would be nationalised not later than July, 1950, and that its imprudence lay in its failure to take an objective view of the position before entering into an agreement conferring on the manager the title to such enormous compensation.

Leading Counsel, instructed on behalf of the manager, stressed the fact that the manager had been appointed on October 31, 1945, and made the point that, had the oral agreement between the company and its new manager been executed before November 19, 1945, the agreement could not have been challenged.

The Tribunal, in stating its decision, held that the statement of the Lord President of the Council must be construed to mean that in the interval between November 19, 1945, and the date of vesting, gas undertakings were to carry on in the ordinary way, regardless of nationalisation.

It agreed that the statement implied that there should not be any halt in the progressive development of undertakings and that no prejudice would be held against any which continued to develop. In these circumstances, the Tribunal declared, it was the duty of the company to select, as general manager, from the talent available, a first-class man with requisite qualifications. To have done otherwise would have prejudiced the progressive development of the undertaking. The Tribunal agreed that the company *bona fide* selected the most qualified applicant for the post and that the manner of his appointment in no way departed from the usual course of business.

Compensation Provided

It was also in evidence, said the Tribunal, that for many years previously officers entering the service of gas undertakings had been apprehensive as to the effect of amalgamations on their future. Unless the company was prepared to include a provision for compensation in the agreement, the services of the general manager would not have been secured. In this connection, the Tribunal added, one must not lose sight of the fact that suitable administrative officers for the higher ranks were not easy to obtain and it quoted the following extract from the Heyworth Report (1945) on the Gas Industry:

> 'Recruitment to the higher ranks for executive and administrative posts has presented problems of greater complexity, and we have been left with the impression that men of the necessary standard of attainment and ability have not been forthcoming in sufficient numbers to keep pace with the requirements of the industry.'

On a further question as to whether, after November 19, 1945, the company should have reconsidered the terms of the manager's appointment in view of the probability of nationalisation before July, 1950, the Tribunal did not think there was anything in the statement of Mr. Morrison to preclude the company in this instance from entering into an agreement with its new general manager on lines given to his predecessor. The fact that the appointment had been subject to an oral agreement prior to November 19, 1945, on the strength of which the manager resigned his appointment with his previous employers made it all the more necessary for the company to honour its agreement. 'We do not think that it can be said that such an agreement was not reasonably necessary or was made with an unreasonable

(*Continued on p. 48*)

NATIONALISATION AND THE PROFESSIONS*

By J. R. W. ALEXANDER, M.A., LL.B., F.C.I.S.,

Barrister-at Law, Vice President, Chartered Institute of Secretaries and formerly General Manager, British Gas Council

APART from the totalitarian States, Great Britain is probably the most highly socialised country in the world, despite the fact that it is generally regarded as the repository of tradition and individualism. This reconciliation of the apparently irreconcilable marks the adaptability of the British way of life and discounts the allegation that Britain is a reactionary land. It does not necessarily follow, however, that the socialistic measures adopted are acceptable to the majority of its population of over 48 mill., or that Socialism's more recent form, the nationalisation of certain major industries, is likely ultimately to result in greater national and individual prosperity.

Nationalisation is based on the State ownership of the means of production, distribution, and exchange, which Marxist doctrine has been inherited by the Socialists. Its implementation is not new. The Port of London Authority is 41 years old, while the Central Electricity Board, the London Passenger Transport Board, the British Broadcasting Corporation, the Agricultural Marketing Boards and the British Sugar Corporation were among the public corporations to be established between the two world wars.

In addition, although different in several ways, there are the Government postal, telephone, and telegraph services and municipal trading in, among other things, gas and water (which were among its early manifestations), electricity, and transport. From such public authorities grew the joint boards, of which the Metropolitan Water Board of 1902 is an example.

Formidable as this socialisation over nearly half-a-century may appear to be, it has been extended during the four years 1946 to 1949 to an unprecedented extent and at a pace which, even to many of its advocates, are a source of apprehension.

Problems Involved

Further socialisation by nationalisation can only be embarked upon on the basis of socialist belief and the assumption, for it is too early to secure proof one way or the other, that substantial advantage will accrue from the nationalisation so far accomplished. It is profitable, therefore, to examine some of the problems which need to be resolved before the process should be allowed to proceed.

If monopolies are contrary to the public interest, why are they less so when established by the State?

Is it true that 'in general the State is a bad industrialist, a bad salesman and a bad business man'?

Is nationalisation the only means of achieving increased output, economy, service, and lower prices?

Are extravagance and waste inevitable under nationalisation?

What grounds are there for concluding that industrial relations will be better under nationalisation than private enterprise?

Does 'the mixing of party politics in the life of nationalised undertakings lead to the choice of heads no longer according to the criterion of competence and professional qualities, but according to partisan manœuvre' and will nationalisation 'harm the human person' and render him 'stifled and subservient'?

Can the worker combine against and withhold his labour from the State and is it the socialist conception that he should be permitted to do so?

Is it 'the irony of fate that the men who are worst hit by nationalisation are the great trade unions and their leaders'?

Will the demand be met for 'greater and direct trade Union representation on all nationalised industry boards at all levels'?

The field from which competent executives can be chosen being none too wide, does the State expect to place itself in a better position than private enterprise in this respect?

Will the domestic and industrial consumer continue to enjoy freedom of choice?

Will realistic competition be allowed to continue between nationalised gas, electricity, and coal and how is this and freedom of choice to be reconciled with a national fuel policy?

Will the consumers' councils effectively protect the interests of consumers?

Is it not 'right or reasonable that a Minister should have to answer questions on nationalised industry when he has not got effective control'? Who has got control and how can he be made to answer?

How will the co-operative movement be effected by nationalised trading and what is, or will be, its attitude?

Will taxation received by the Exchequer from a nationalised industry be less than it would have been had the component units been separately assessed as under private enterprise?

In future nationalisation Acts, will compensation which proves to be fair be paid to the dispossessed owners?

Position of the Professions

The advocates of nationalisation may be relied upon actively to promote their beliefs; those who think otherwise must be equally active in support of their convictions. This applies particularly to the professional man, who—apart from his own interests—has, by reason of his education, influence, and place in the community, an important part to play in the nation's welfare.

He must not think that the issue is one for others to determine, or that participation in the controversy is inconsistent with his work. His may be the next profession to be involved. The lawyer may find the recent extension of free legal aid to result in the larger proportion of his fees being derived from public funds, from which it is but a short step to a salaried profession for the majority. Architects, as more and more enter the ranks of the employed by reason of Governmental and local authority building and town planning, may become increasingly subject to direction and find less scope for the expression of their individuality. Such loss of independence in the practice of a profession is retrograde and contrary to the public interest.

Nationalisation has already had some effect on the activities of the professions. The outcome cannot at present be assessed, but if it is adverse it will not be to the advantage of the nation. The maintenance of the independence and integrity of the professional man is as essential as it is true that well-developed professions distinguish the civilised community as well-developed nervous systems distinguish the higher animals.

Standards of Conduct

Professional men observe definite and enforceable standards of conduct in the practice of a skilled technique based on training and experience. In their work they enjoy independence, necessarily to a greater extent when in public practice than if employed. This operates to the advantage of the client or employer and involves due regard for the public interest, which is further served by the associations to which professional men voluntarily or compulsorily belong.

Nationalisation is far removed from syndicalism, the system under which worker committees elect their own managers. In fact, employees find themselves under a single employer having a monopoly of jobs. The employee of a nationalised industry may not find it easy to extricate himself from its service, especially if his experience has limited value elsewhere. It remains to be seen if these apprehensions are realised; if they are it will have a profound effect on the position of the professions.

Skilled administration and organisation can do much to allay the apprehension of officers in the nationalised industries. His personal problems—apart from the emoluments and conditions of his employment, compensation for loss and pension rights—largely relate to the difficulties of complying promptly with directives from above, especially when they are not understood or appear unnecessarily to minimise his authority. Allied to this are the provision of facts, figures, and information, the answering of questionnaires and the rendering of reports, for which he often has inadequate records and resources.

* From an Address to the Branches of the Chartered Institute of Secretaries in Londonderry (March 30), Belfast and Dublin (April 3, 1950).

LAUNCH OF THE 'PORTSMOUTH'

The long and happy association between the former Portsmouth and Gosport Gas Company and Stephenson Clarke, Ltd., was carried a stage further on February 17, when Mrs. W. K. Tate, wife of the General Manager of the Eastern Division, Southern Gas Board, christened a new collier, the 'Portsmouth,' for service in the South Coast trade. This motor vessel, which is being built to the order of Stephenson Clarke, Ltd., by John Crown & Sons, of Sunderland, is designed to have a carrying capacity of nearly 2,500 tons of coal, and will be the first ship to be equipped with a Clark-Sulzer diesel engine. Ordered some three years ago, she will play a major part in meeting the increasing coal requirements of the Portsmouth undertaking, which is itself rapidly completing the construction of a new jetty and suitable cranes, bunkers, and conveying plant to discharge upwards of 200 tons of coal per hour. The close associations of former days are being continued by the Southern Gas Board, and the

The Launching: (Left to right) Mr. R. C. Thompson, Director of John Crown and Sons, Ltd., Mrs. W. K. Tate, and Mr. W. K. Tate, General Manager, Eastern Division, Southern Gas Board.

'Portsmouth' is the first of five ships which are to be laid down and operated by Stephenson Clarke, Ltd., to carry the board's coal supplies to their major manufacturing plants at Portsmouth, Southampton, Bournemouth, and, ultimately, the Isle of Wight. Apart from being the first ship to be fitted with the Clark-Sulzer engine, she will be the largest vessel ever to navigate to the commercial quays in Portsmouth Harbour. Her general equipment includes the most modern auxiliaries, navigational aids, and deck machinery, while particular thought and care have been lavished on the accommodation for both officers and crew, each member of which has his own separate cabin. The vessel is expected to pass into commission at the beginning of May, and her leading dimensions are: Length on load water line, 253 ft. 6 in.; extreme breadth, 38 ft. 3½ in.; loaded draft, 17 ft. 4 in.; speed, laden, approximately 11 knots. Engines, 1,125 B.H.P. at 220 r.p.m.

J. R. W. ALEXANDER — continued from p. 44.

Admittedly, the controlling authority must have adequate information concerning the units for which it is responsible. Reasonable time must be given for the entirely new organisation to function smoothly. But full recognition of the human element and the employment of qualified professional men, experienced in large scale administration and organisation, would do much to expedite the process and avoid the pitfalls.

Professional Qualifications

Future entrants to the nationalised industries will be required to possess qualifications appropriate to the work to be discharged and advancement may be denied to those not so qualified. Such requirements are not new, but they will become more exacting and universal under nationalisation, by reason of its inevitable uniformity and insistence on specified standards.

Education at the expense of the State is now so freely available to those able to take advantage of it that no suitable person need be precluded by lack of means from acquiring qualifications appropriate to his abilities and inclinations. The youth of today is accustomed to regimentation, restrictions, and queues, to the control of his activities and to the provisions of his needs by the State. He finds, therefore, less difficulty in serving a nationalised industry than his father does. This, however, makes the impact of socialism none the less significant.

While the education and examinations of chartered secretaries are primarily related to the work of the secretary of joint stock companies and public bodies, the training is particularly appropriate to those whose projected careers necessitate, as in the nationalised industries, a knowledge of secretarial practice, accountancy, law, economics, and commerce.

The work of the chartered secretary frequently embraces, or leads to, substantial administrative and managerial functions. They occupy many positions in the nationalised industries, including several of the senior appointments. It is expected that their numbers will increase as the demand expands for properly qualified and experienced officers, having the necessary adaptability to meet the requirements of industries the entire structure of which has been changed by socialisation.

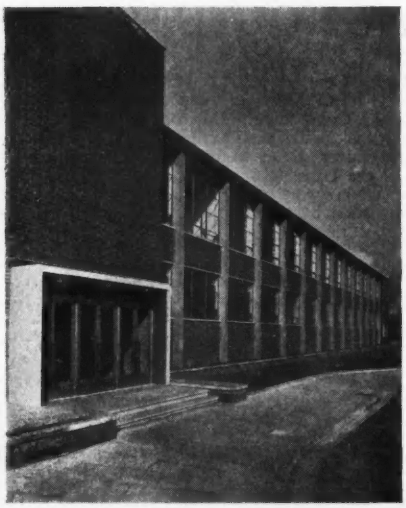
Worcester Gasworks are to be enlarged as a result of alternative accommodation having been found for people at present living in houses nearby. As a result of this the West Midland Gas Board has dropped for at least five years its plans for a gasholder and new works on the Perry Wood site, which have caused much local opposition.

Women's Gas Council

On March 20, at Gas Industry House, over 100 Women's Gas Council branch officers and members, together with headquarters members, were addressed by Mr. Jack Triggs, Assistant Director of Public Relations to the Festival of Britain. Miss K. M. Halpin, O.B.E., President of the Women's Gas Council National Executive, was in the chair. On March 21, at the Building Centre, a visit was made to the Gas Council exhibition 'Gas in the Design for Living.' This was followed by a lantern lecture and talk at Gas Industry House, by Mr. Gordon Nash, B.A., A.R.I.C., A.INST.P., of the Building Research Station, on 'Some Further Results of the Heating Trials at Abbots Langley.' Miss C. E. Ellington Wright, M.B.E., Chairman of the W.G.C. National Executive, presided.

After a buffet luncheon, an informal meeting of branch officers and headquarters staff was held in the members' room. Miss O. L. Humphries, Vice-President, W.G.C. National Executive, was in the chair. Miss Ellington Wright described the new arrangements for carrying on the work of the Council at headquarters, and Miss Whalley, Hon. Secretary, Liverpool Branch, gave details concerning a conference to be held in Southport for Branches in the North West area.

Finally, a tour was made of the Ideal Home Exhibition at Olympia.



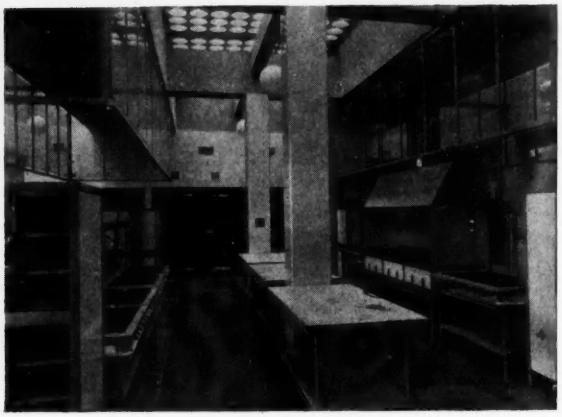
Three Day Tour of the

Sir Edgar Sylvester Opens

THE new welfare centre at the Product Works, Beckton, of the North Thames Gas Board was opened on March 24 by Sir Edgar Sylvester, Chairman of the Gas Council. Mr. M. Milne-Watson, Chairman of the North Thames Gas Board, introducing Sir Edgar Sylvester, said that the afternoon's ceremony made a very suitable culmination to the three day visit made by Sir Edgar to see some of the work which was going on in the area of the North Thames Gas Board.

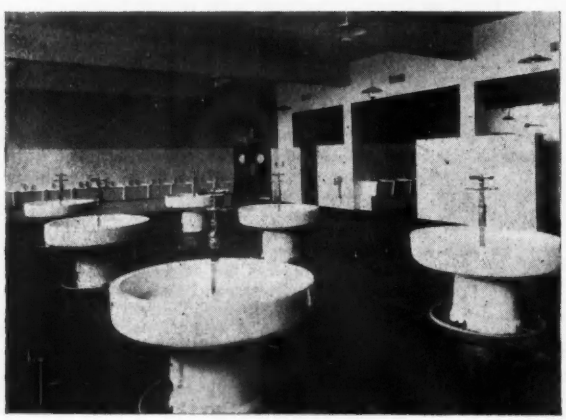
'The foundation stone,' he said, 'was laid in November, 1948, by the Duchess of Kent, and today we see this welfare centre finished and in use. I would particularly like to mention the name of Mr. Hutchison (Chairman of the South Eastern Gas Board) for he had a great deal to do with the planning of this building; and so had Mr. Blundell (Controller of By-Products). Any mention of names is invidious, for credit is due to so many people—Mr. Shearing, the architect, Brian Colquhoun and Partners, and Taylor Woodrow.

'We do not claim this building is the last word in welfare centres, but it is a big step forward from anything we in the North Thames Gas Board have had in the past. It is expensive—very expensive—it would be idle



Above: *Our photographs show (top left) the main entrance to the welfare centre, which in its two storeys provides meals for 1,000 employees, and changing accommodation and washing facilities for 600; (left and right) views of the centre's extensive kitchen with its pleasant and practical colour scheme and exceptional lighting. The kitchen serves the separate dining rooms on the upper storey for men, foremen and assistant foremen, and staff. Seven hundred people can be accommodated at one sitting in the dining rooms and canteen.*

Below: *(Left) Part of the men's washing facilities on the lower floor, which contains the lockers, baths, showers, lavatories, and the billiard room. Clean clothes are left in the clean locker room on arrival, the employees passing through the bath-room to the dirty locker room where their working cloths are kept. The floors are of coloured asphalt, chosen for its warmth and cleanliness. The men's canteen, in which the cafeteria system has been adopted, is shown on the right.*



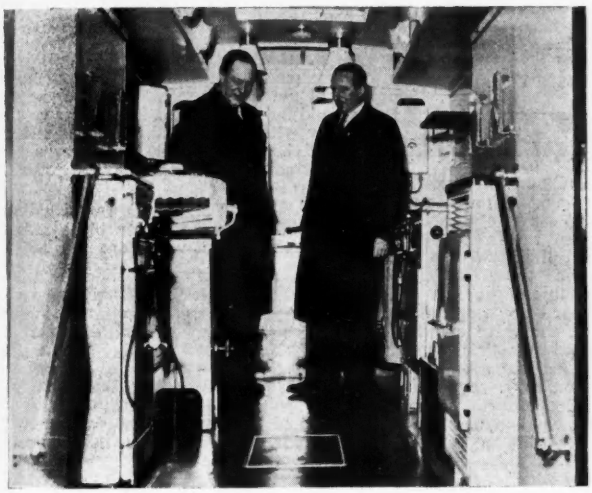
North Thames Area

Welfare Centre at Beckton

to ignore this factor, but I am sure it is going to be worth while.'

Sir Edgar Sylvester said: 'It is a great privilege to be asked to open this welfare centre. It is a wonderful piece of work and I am sure that all the people who spend their working days here will appreciate it. I remember that before the war a great deal of anxiety was felt because the amenities of these works were very much below standard and had been so for a number of years. I am heartily glad to see that the plans which were laid then for better working conditions have come to fruition. Perhaps it is a good thing there has been this delay because you now have a building which incorporates the latest post-war designs.

'People do, and always should, come first and it is a very proper thing that this centre should head the very extensive plans for the reconstruction of the works.



'There is no need for the processes at these works to be unduly unpleasant or dirty and modern high efficiency plants, operated in hygienic conditions, are replacing the methods of the past. Modern plants call for well-trained and well selected personnel and the amenities at this centre will attract the kind of workers required. We can regard this building as 'the shape of things to come,' for in its train will follow new shops, new services, new roads and new railways—all essential if these works are to serve the great chemical industry of the country as it should. The task of the present management is to plan and organise for a highly competitive future and to build on a tradition of long service and co-operation with its workers.

'Every step forward in life and business is an experiment and, in a sense, this is an experiment. It is for those for whom this new building is provided to prove this experiment a success. I am sure they appreciate the privilege of having one of the finest welfare centres in the country.'

Left: *A new mobile showroom (shown above) being inspected by Sir Edgar Sylvester and Col. H. C. Smith.*

Below: *On March 31, Sir Edgar presented prizes to a gathering of salesmen at Caxton Hall. In the front row, left to right, are Mr. Leslie Hardern, Dr. H. Hollings, Dr. J. Burns, Mr. S. G. Aberdein, Sir Edgar, Mr. Michael Milne Watson, Col. H. C. Smith, Mr. F. M. Birks, Mr. Brian Wood, and Mr. R. Wood.*

Littlehampton Trades Fair

His Grace the Duke of Norfolk inspects a Parkinson and Cowan cooker on the Brighton undertaking's stand at the recent Littlehampton Trade's Fair. He is accompanied by Mr. S. C. Johnson, Littlehampton Area Superintendent (left), and Mr. H. B. Collins, Sales and Service Manager (right). Organised by the Littlehampton Chamber of Commerce, the trades fair attracted over 8,000 visitors.

TRIBUNAL—Continued from p. 43

lack of prudence,' said the Tribunal.

The Tribunal expressed itself satisfied that the agreement had been made in the 'ordinary course of business.' According to evidence, at the time when the oral agreement was made (October 31, 1949), the overhanging possibility of an extension to the company of the process of fusion by amalgamation with consequential redundancy among senior officers was a factor of cardinal importance; hence any applicant for a senior appointment would naturally insist on provision for adequate compensation against a contingency such as fusion.

Nor did it think that the agreement was in any way connected with any provision of the Gas Act or with any anticipation of making any such provision. The evidence indicated that when the oral agreement was made the probability or otherwise of nationalisation was not discussed. The Act was not published until 2½ years later. It could not be contended, the Tribunal maintained, that the agreement was made in anticipation of the Act.

The Tribunal revoked the notice of disclaimer given by the board to the company's general manager on May 3, 1949, and directed that the manager should be awarded the costs of the proceedings.

Mr. Gerald Gardiner, K.C., and Mr. Maurice Lyell appeared for the manager; Mr. Gerald Upjohn, K.C., and Mr. John Megaw appeared for the gas board.

We Published in last week's *Journal*, p. 768, one of the new posters which the North Thames Gas Board will display in continuing their 'Cooking by Gas Campaign' for another six months. We have since been informed that this campaign will be shared jointly by the Eastern, North Thames, and South Eastern Gas Boards. The South Eastern Gas Board, however, will introduce to the basic poster an additional slogan, 'A Few Pence a Day Buys a New Gas Cooker,' which has played an important part in a successful campaign during recent months.

Survey of Raw Materials

The Purchasing Officers' Association has commenced the publication of a new series of booklets on surveying the world sources of the main raw materials of industry. Although primarily designed to cover the syllabus of the Association's final examination subject, the first two booklets to be issued provide useful factual information, the value of which will not be confined to the student. Booklet No. 1, *Raw Material of the Iron and Steel Industry*, by A. K. Osborne, A.MET. (Brown-Firth Laboratories), lists the principal materials used in alphabetical order with an indication of their sources, availability, consumption, and methods by which they are produced. The second booklet deals more briefly with the production, refining, consumption, and utilisation of petroleum. Its author, George Sell, F.INST.PET., also provides interesting data on current production and world reserves of crude and synthetic petroleum. The booklets can be obtained from the Association at Wardrobe Chambers, 146, Queen Victoria Street, London, E.C.4, price 3s. and 1s. 6d. respectively.

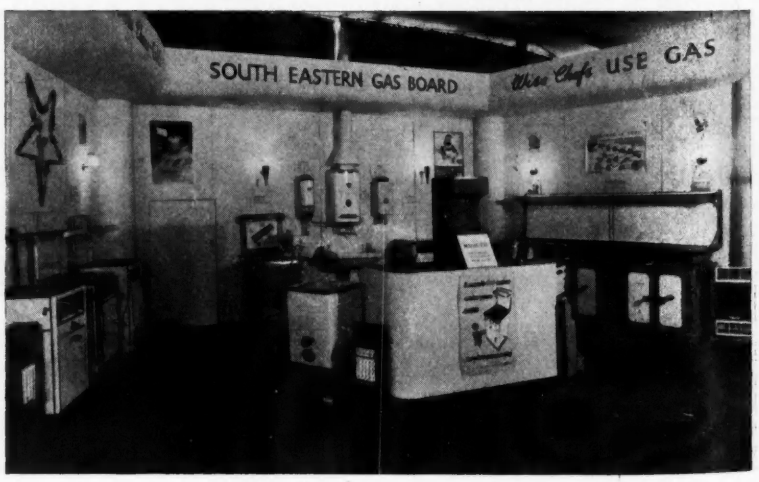
Gasworks Assessments

The assessment of the Galston gasworks for rating purposes has gone down from over £2,000 last year to £315 for the current year. In effect, the change in valuation of assessment for rating purposes means a loss of about £900 in rating revenue to Galston.

At a meeting of the Galston Town Council it was stated that the assessment was understood to be made on the basis of profits, and it was agreed that some explanation seemed called for as to how the profits—and, consequently, the assessment—had suffered such a tremendous fall since the undertaking had been nationalised. The fact that in future the gasworks were to be taken off the valuation roll and that local authorities were to be paid a grant in lieu of rates made it all the more urgent that this matter should be looked into. If the new valuation was to be accepted, the grant in lieu would be scaled down and show a big drop compared with the previous revenue from rates.

The Town Clerk was instructed to ascertain the reason for so big a reduction in the current valuation.

The High Rate of manpower withdrawal from the mines continued in the week ended March 18 with a loss of 700 men, of whom 100 were workers at the face. Total production of coal in the week ended March 25 was 4,380,700 tons, against 4,358,900 in the previous week and 4,289,000 in the same period last year. Gas available at gasworks during the week ended March 24 amounted to 10,966.4 mill. cu.ft., against 11,461.9 mill. in the week before. Electricity sent out for public supply from solid fuel fired stations totalled 955.3 mill. units, against 1,023.1 mill., over the same period.



This attractive display was shown by the Margate undertaking at the recent Exhibition and Civic Festival, organised by the local Chamber of Commerce and attended by over 14,000. The gas lighting points attracted particular interest when there was a complete electricity break-down during one of the evenings.

Gas Securities Interest

NOTICE has been given by the Ministry of Fuel and Power and the Gas Council that some 1,700 classes of gas securities have been valued and have been included in Statutory Orders made by the Minister. Payment of six months' interest on the British Gas Stock issuable in lieu of these securities will be made on May 1 to holders on the registers at the close of business on March 27.

In regard to securities which have not been valued or, having been valued have not yet been covered by a Statutory Order, the Minister has issued a Direction that the Gas Council shall on May 1 make payments of interest to the persons who were the registered holders at the close of business on March 27.

The amount of interest on these securities will relate to the period of six months to April 30, 1950. The interest will be paid at such rate on the nominal value of the old securities as is estimated to produce, in the opinion of the Gas Council, a payment not exceeding the amount of interest which will be found to have accrued in that period on the British Gas Stock ultimately issued.

No provisional interest payment will be made on May 1 in the case of securities on which no dividends or dividends averaging less than 1½% per annum were paid in the years 1944 to 1947.

In the case of securities, the values of which are agreed between the Minister and stockholders' representatives and announced by the Minister before May 1, but which are not covered by a Statutory Order until after that date, the Gas Council will arrange that as far as practicable the interest payment on May 1 will be the actual amount due for the second period of six months on the British Gas Stock to be issued in due course by way of compensation.

Where securities are valued and are included in a Statutory Order made by the Minister during the six months commencing on May 1, interest on British Gas Stock issued by way of compensation will be paid as from that date in the normal way, but if any amount is due by way of interest for the two preceding periods of six months (because any payments made on November 1 and to be made on May 1 are less than the sums ultimately found to be due or because no payment was or will be made on those dates) the Gas Council intend to ask the Minister to issue a further Direction to make good the deficiency.

South Eastern Gas Board Coat of Arms

Our photograph shows the Coat of Arms of the South Eastern Gas Board. The background of the lower part of the shield is gold, to represent the Board's products, heat and light. The background of the top part is black to represent the coal from which the products are manufactured. The wavy blue bar represents the River Thames, which forms the northernmost boundary of the area served by the board, and also carries its primary material, coal. The embattlement of the chief represents the authority of the board. The three lions' faces of the chief represent the Royal Authority under which the board holds its own. It is typified by the faces only of the three Lions of the Norman Kings.

The supporters, the Saxons, who first came to this island through its south-eastern gateway.

The crest is derived from the arms of the seven Cinque Ports (Hastings, Dover, Sandwich, Romney, Hythe, Rye, and Winchelsea), all of which lie within the board's area. It typifies the sea, on which the board's primary material, coal, is borne, and at the same time suggests its southernmost boundary.

Freely translated, the Motto means 'We will build on sure foundations.'

South Eastern Gas Consultative Council

A meeting of the General Purposes Committee of the South Eastern Gas Consultative Council was held on March 7, under the chairmanship of Alderman A. C. Warwick, J.P. The appointment by the Minister of Mrs. D. N. Rathbone as Deputy Chairman of the Council was reported.

The business was mainly concerned with the formation, from nominations received, of six district committees namely, Metropolitan, West Surrey, East Surrey, Kent Suburban (10 members each), Kent County and Sussex (15 members each).

Subject to individual acceptances, the Committee's recommendations in this matter will be submitted for formal ratification at the next meeting of the Council.

It was decided to investigate a complaint received on behalf of consumers in the Guildford district in the matter of recurring low pressure of gas.

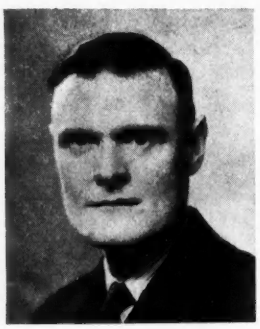
The above group is of members of the Eastern Junior Gas Association who visited Ipswich gasworks on March 8. Included in the front row (left to right) are Messrs. A. B. Scott (Cromer), S. Halls (Cambridge), L. C. Coleman (Bury St. Edmunds), F. J. Denny (Engineer, Ipswich, who arranged the visit), R. W. Hilham (Colchester, Secretary of the Association), J. T. Brookes (Norwich, President of the Association), C. J. Barkaway (Bury St. Edmunds), R. Goose (Colchester), R. L. Smith (Colchester)

THE INSTITUTION AND THE JUNIOR ASSOCIATIONS*

By J. H. DYDE, M.Sc., M.Inst.Gas E.,

Vice-President of the Institution of Gas Engineers, Deputy-Chairman of the Eastern Gas Board.

***EDITOR'S NOTE*:—In the early part of this address Mr. Dyde gave an outline of the role of the Institution of Gas Engineers in the gas industry, explaining with his customary clarity the way in which the Institution has striven to fulfil the objects and purposes of its Royal Charter in the past and the trend of its future development. He then passed on to review the position of the Institution *vis-a-vis* the District Associations and the Junior Associations. Mr. Dyde's views are set out in the following extract from his address.**



TO my mind a fundamental and most desirable element has been introduced into the autumn research meeting of the Institution of Gas Engineers during the past two years. For the first time, at any rate in my experience, we have found the pure research man and the practical engineer on common ground tackling the day-to-day problems of the industry. This was particularly evident in work on the hardening of oxide and the conditions necessary for efficient working of the orthodox box purifiers. It was evident again in the investigation on coke breakage and sizing, and again on the production of coke most suitable for the domestic market. One sensed in listening to the discussions that we were getting somewhere and producing something of immediate advantage. The policy of dealing with research under three headings, namely :—

(a) Application to existing processes and existing plant to secure maximum efficiency and improved technique;
(b) semi-scale development of new methods arising from fundamental research;
(c) fundamental research of a long term character, all pursued simultaneously would appear to be a right one and one likely to yield the highest dividend.

It is important that research should not be allowed to proceed in a groove that may become so well-worn that it is difficult to set it on another course. There must be flexibility of thought and outlook in its direction. For instance, problems arise sometimes with remarkable rapidity and need urgent attention, such as the fuel crisis three years ago which had to be met by adaptation of carbonising plant to the gasification of oil. Today a common and urgent problem is the treatment and disposal of gasworks effluent. Resources have to be marshalled immediately to meet such problems.

It can be claimed that the Institution represents the gas industry in all technical matters, both those which affect other technical bodies and those which affect the industry as a whole. The Institution membership consists of nearly all the qualified professional personnel in the industry. It can therefore call on the experience and knowledge of gas engineers of every type whose sole concern is with the proper technical development and efficient working of the industry.

When problems have arisen there has been a prompt response in the formation of investigating committees and the results therefrom which have been placed at the disposal of the industry have generally proved to most efficacious.

The Gasworks Effluents Committee has just been reconstituted with the special terms of reference to deal with all aspects of effluent disposal, excluding research, and with all types of gasworks effluent. Dr. H. Hollings, who is Chairman of the Gas Research Board, has taken over the chairmanship of this committee.

The Gas Council is aware of the many urgent problems associated with effluent treatment and disposal and has passed the technical consideration of these problems to this committee. There is a research element in these problems in that we know little of the composition and reactions of the higher tar acids, their possible separation or methods of destruction, and these will be handed over to the Gas Research Board. In addition the immediate technical problems are associated with commercial and legal considerations and in the whole position is extremely complex. Every engineering student should possess a copy of the Institution's publication by Dr. A. Key, 'Gasworks Effluents and Ammonia,' for the work is fundamental to a proper appreciation of the subject.

Educational Service

Educational service is one of the principal objects of the Institution as specified in its Royal Charter. Training in the technology of gas manufacture was conducted as long ago as 1873 when the Royal Society of Arts held examinations in that subject. The City & Guilds of London Institute came into the field in 1879 and extended the training to include distribution and utilisation of gas. The subject of gas fitting was added to the Institution's activities in 1915 and the Institution still maintains close collaboration as an important part of its educational scheme.

The training and education scheme for professional gas engineers in manufacture and supply that is best known to you is that of the three grades of examination, the Ordinary, Higher, and Diploma grades which are accepted as the academic qualifications for Studentship, Associate Membership, and Membership, respectively, of the Institution, which owe their origin to the annual meeting of 1919 when a Gas Education Committee was appointed to consider a revision of the methods of education for and examination of the technical personnel of the industry.

From the outset the committee realised that the only way in which as wide a coverage as possible could be given for students scattered throughout the length and breadth of the country was to initiate courses at technical colleges. Ancillary subjects, some common to those required for the National Certificates of other professional bodies, were utilised, but all appropriate to the proper understanding of gas manufacture or supply and included as integral parts of the courses and of the examinations. The courses have been designed in consultation with and had the approval of the Ministry of Education and the Scottish and Irish Departments of Education. These courses generally extended, as you know, over five years, requiring attendance at the technical college for three evenings a week for the period.

Meanwhile, the City & Guilds of London Institute continued with the examinations of gas fitters and also provided the minor courses in gasworks practice and gas supply practice designed for those who did not aspire to the full professional qualifications of the Institution—in other words, for the foremen and supervisory classes.

After some years of experience with the major courses and coming to the period immediately before the war, the Council felt that a revision was desirable particularly with a view to obtaining a closer conformity with the method and standards of the other engineering institutions, particularly those of the Institution of Civil Engineers. After lengthy negotiations

* An address to the Scottish Junior Gas Association at a Joint Meeting of the Eastern and Western Districts on March 11, 1950.

and careful consideration the *ad hoc* committee produced a revised scheme which was acceptable to the Council. The revised scheme initiates an Associate Membership Examination which, in due course, will replace the existing Ordinary and Higher Grade Examinations. This revision will become fully operative by 1952, although candidates will be accepted for the final examination in the spring of 1951.

Compensating Advantages

While the standard will be rather higher than the former Higher Grade Examinations, there are considerable compensating advantages to the successful students in placing the standard equivalent to that of the other engineering institutions and in enabling them to qualify for corporate membership of other engineering institutions without a great deal of further study

It was known that many of the more progressive undertakings used to train their supervisory grades, foremen, and charge hands to the standard of the Ordinary Grade in manufacture or supply, and with the consequent discontinuance of these examinations upon the initiation of the Associate Membership Examination a new situation had to be met. This has been done by arrangement with the City & Guilds of London Institute for full certificated courses in the technology of gas manufacture and gas supply to replace the minor courses. At the same time the gas fitting courses have been amended to lead to a full technological certificate. These courses have only been in operation for two years, and the upward trend is not yet discernible, although it must become so as soon as the Ordinary Grade examinations cease after next year.

One other educational activity was undertaken by the Institution at the request of the former British Gas Council, and that was the provision of a suitable course of instruction and training for the large number of salesmen and district representatives within the gas industry. A committee comprising representatives of the Institution, the British Gas Council, the Ministry of Education, and the Incorporated Sales Managers, known as the Sales Training Committee, prepared a scheme of training and instruction the successful completion of which gave the award of a certificate in Gas Salesmanship and Consumer Service. The course lays special emphasis on a sound technical knowledge of distribution and utilisation of town gas, the ability to speak and write good and fluent English, a knowledge of the principles of salesmanship, and the possession of suitable personal qualities. The examination includes an oral test. The Gas Council has nominated its representatives on this committee to replace those of the former British Gas Council. This is yet another liaison with the governing body of the nationalised industry.

It will be observed, therefore, that the Institution is operating complete and adequate schemes to cover all grades of personnel engaged in technical activity from the gas fitter to the professional gas engineer.

A Duty to the Profession

Section 4 of the Gas Act requires the area boards, in consultation with appropriate organisations, to provide for the training and education of all ranks of their employees. The Gas Council, in consultation with the Ministry, is required to co-ordinate the work of the area boards.

The Institution has the right under its own Charter to determine the educational standard it shall set for corporate membership of its own body and would jealously, as with other professional institutions, safeguard that right. There is none better to judge a man than his peers. In this respect the Institution has a duty to professional men in the complete gas industry other than that section of it which at present comes under the Gas Act.

Having made that reservation, the Institution, with its specialised staff and its contacts with the Ministry of Education and other bodies interested in education, is well equipped and would be most happy to serve the nationalised gas industry in the extension of training and education of its personnel. It is appreciated that while the academic aspect of training and the administration of the examination systems can be handled from a central headquarters, the practical training must necessarily devolve on the area boards, and in other directions on the firms who design and manufacture plant and appliances.

In the training for management in its various degrees there is a danger, as pointed out by Sir Charles Renold in his recent presidential address to the Association of Teachers of Technical Institutes, of the professional bodies and the technical colleges overplaying their hands.

The learned bodies can only prepare a man for the experiences he is likely to meet; they cannot provide these experiences or witness the reactions of the individual to added responsibilities. It is only by giving responsibility that experience in management can be obtained and that again brings the problem home to the duties of the area boards in their handling of human material in their charge.

There is an increasing feeling throughout industry that sufficient attention is not being paid to training for management and leadership. In the gas industry today there is a great lack of men with suitable personal qualities and properly trained technically to take on the responsibilities of works superintendents, shift and general foremen, and charge hands. It was a realisation as much as anything of this need that caused the Institution in collaboration with the City & Guilds of London Institute to come forward with the full Technological Certificate in Gas Manufacture and Gas Supply. It is hoped that the industry will make a careful selection of the right kind of men to send forward to these courses and grant the necessary facilities for part daytime study.

Finance

If you examine the Institution accounts submitted at the annual meeting you may be puzzled as to why these are shown in two parts, a General Account and a Special Purposes Fund Account.

The General Account derives its income from the subscriptions of its members, interest on investments, and sale of some of its publications. This money is spent for the most part on the professional services it renders to members, together with a proportionate share of the general charges of administration.

The Special Purposes Fund takes its income largely from a contribution from the gas industry formerly made through the central body, the British Gas Council and its predecessors, and the whole of that is spent each year on the technical and educational services it gives to the industry, including a charge in respect of the Research Fellowship. The new Gas Council has for the time being continued the rate of contribution to enable this important work to go on. The Institution is at an important phase in its history. It has the ball at its feet. If it can show by its efforts and its example that it can extend its technical and educational work to the advantage of the industry there is no doubt in my mind that the Gas Council will support it.

Affiliated District Gas Associations

Mr. George Dixon, in his presidential address to the Institution in 1940, made the following statement:—

> 'It is always a matter of regret to me that it has never been found practicable to make the District Associations into more directly linked 'Sections' of the Institution, at meetings of which the work being done by the parent body could periodically be reported to the District members for their information and criticism.'

This theme was pursued by Sir Frederick West in his presidential address to the Institution two years later:—

> 'The suggestion has been made that the Institution

(*Continued at foot of p. 52.*)

EXTENSIONS IN THE NORTH EASTERN AREA

By J. HARGREAVES,

Planning and Progress Officer, Chief Engineer's Department, North Eastern Gas Board

***EDITOR'S NOTE:*— The following is from Mr. Hargreaves's Presidential Address to the Yorkshire Junior Gas Association, given on March 15. In it the Author outlines development plans at the Birkshall Works, Bradford, of the North Eastern Gas Board. He discusses other broad aspects of gas supply and service, concluding by saying that fears regarding the possible adverse effects of nationalisation of the gas industry are in the event proving to be groundless.**

THE comprehensive scheme of extensions which is being carried out at the Birkshall Works, Bradford, of the North Eastern Gas Board, will raise the daily manufacturing capacity from 7.5 mill. cu.ft. of 475 B.Th.U. coal gas and 4 mill. cu.ft. of carburetted water gas, total 11.5 mill. cu.ft., to 13.5 mill. cu.ft. coal gas and 6.5 mill. cu.ft. carburetted water gas, total 20 mill. cu.ft. At the present time up to approximately 2 mill. cu.ft. of coke oven gas is taken daily from the West Yorkshire grid supply. This is brought by 4¼ miles of 8 in. dia. high pressure main from the grid main at Cockersdale.

When these extensions are complete Birkshall, which will be the largest single works in the area, will fit into the scheme of area development at present being planned. The first effect will take place when the new C.W.G. plant comes into full production, when approximately 2 mill. cu.ft. of coke oven gas per day will be made available to undertakings connected to the grid. Furthermore, by about 1952, when the 6 mill. per day carbonising plant is in production, there will be a surplus of gas available for use elsewhere.

The extensions to the plant include the following:—

Carbonising Plant: Complete installation of Woodall-Duckham continuous vertical retorts consisting of two benches, each of 48/82 in. retorts embodying the lambent-heating system capable of carbonising 348 tons of coal per day and producing a nominal 6.2 mill. cu.ft. per day.

Coal handling plant including 20 ton wagon tippler, breaker, bucket elevator, and band conveyor feeding overhead storage hoppers. Band conveyor for transferring coal from the existing retort house to the new one.

Battery of four producers each of which can be shut down without affecting the working of the others, and so designed that gas from any producer can be taken to any retort.

Two waste heat boilers for the new installation and one to replace the existing A1 bench boiler. The flues will be so arranged as to permit waste gases from the existing benches to pass through the new waste heat boilers or *vice versa.* After providing for all the steam requirements in the retort house there will be a surplus of over 6,000 lb. of superheated steam per hour for other purposes.

The dust extraction plant consists of extractor hoods fitted to the coke dischargers and connected by ducting to a collecting unit situated outside the retort house.

Coke conveyors consisting of a reversible band conveyor, in duplicate, discharging either into the gravity bucket conveyor in the case of coke for the producers or on to band conveyors forming part of the new coke handling plant.

Coke Handling, Screening, and Storage Plant:—Complete

THE INSTITUTION AND THE JUNIORS — Continued from p. 51

throughout the country should be further unified by the closer attachment of the affiliated and Junior Associations to the parent Institution and that these should all be local branches of the Institution in a similar manner to those of the sister Institutions of Civil, Mechanical and Electrical Engineers. The suggestion has much to recommend it, especially since the day has now nearly arrived when every member of technical staffs of the industry is, or should be, eligible for membership, associate membership, or studentship of the Institution.'

The onset of nationalisation has clinched the issue, for under the new structure of the Institution certain of the functions of the District Associations—namely, those dealing with considerations of commercial and general policy and management—are now the province of area board organisation.

There remains the important technical function, and the conversion of District Associations up and down the country into District Sections of the Institution now imminent means an extension of the platform upon which men of science and technology associated with gas manufacture, distribution, and utilisation can express their views and pool their experience in an atmosphere devoid of the controversial elements of business policy and politics.

I am satisfied that this change will result in a strengthening of the Institution of Gas Engineers.

The Institution has always taken a keen interest in and appreciated the importance of giving every encouragement to the Juniors.

As a Past-President of a Junior Association myself I am fully alive to the splendid work and enthusiasm of the Juniors. I would not like to see this enthusiasm diminished by the changes taking place in the industry today, but it may have to be re-directed.

In some respects the term 'Junior' is a misnomer. A chief technical officer was frequently not a member of the Senior Association because his manager had that privilege, and he operated with the Juniors. Now we find the extraordinary position that many so-called Juniors are holding highly responsible appointments within area board organisations. Their real place should be as full members of the proposed new District Sections.

My own personal view regarding the future of the Junior Gas Associations may be briefly summarised as follows:—

(1) That the Senior and Junior Associations merge in the the new District Sections.

That the District Section would take on the responsibility for the direction and training of its student members, who would be juniors in the strict sense of the word. The annual programme would include special meetings for these juniors.

or

(2) In areas where the present Associations, Senior and Junior, cover a large numerical membership, the Juniors could continue affiliation to the District Sections, retaining as it were their sovereignty, but pruning their membership so that it conforms more nearly to a junior or student technical body.

coke handling plant by Robert Dempster & Sons, Ltd., designed to deal with 70 tons of coke per hour from the existing retort house and 40 tons per hour from the new installation, making a total of 110 tons per hour.

The coke is conveyed by band conveyors to a series of high-speed vibrating type single deck screens which discharge into reinforced concrete storage bunkers having a total capacity of 642 tons. Coke cutting machinery is incorporated in the plant. For loading coke in bulk to road vehicles the bunker cones are fitted with chutes provided with de-breezing screens. Coke can also be fed over de-breezers through automatic weighing machines to bags. Bags can be filled at the rate of 240 per hour. Provision is also made for taking coke from the bunkers by band conveyor to a rail loading hopper.

Coke stocking and reclaiming equipment is provided in the form of a grabbing crane and gantry. All reclaimed coke is de-breezed.

Electrostatic Detarrers:—Two Holmes-Elex type machines to be installed by W. C. Holmes & Co., Ltd. Each will have a capacity of 7.2 mill. cu.ft. of hot crude coal gas per day. They are to be installed prior to the condensers in order to remove the tar acids as quickly as possible, thus ensuring that the ammoniacal liquor from later condensation can be dealt with with as little trouble as possible.

Condensers:—Two single tower eclipse vertical tube multi-pass units by Clapham Brothers, Ltd. Both will be of 3 mill. cu.ft. per day capacity.

Exhausters:—Three Holmes-Connersville machines, each of 3 mill. cu.ft. per day capacity, one being steam engine driven and two electric motor driven.

Ammonia Washers:—Two 3 mill. cu.ft. per day Clapham-Barwick pumpless type machines.

Machinery House:—This will be a new building 93 ft. × 51 ft. having an elevated grille floor. The whole of the electrical gear and drives will be isolated from the exhauster and compressors by a solid wall, driving shafts passing through gas-tight glands built into wall.

Carburetted Water Gas Plant:—This consists of a complete installation having a capacity of 2.5 mill. cu.ft. per day and has been designed and installed by the Power Gas Corporation, Ltd. The plant is of the latest type, being hydraulically operated, fully automatic, and provided with self clinkering generator having an annular jacket boiler. A waste heat boiler is provided for furnishing the high pressure steam required, the annular jacket boiler supplying the low pressure process requirements.

Also included are the usual blowers, pumps, condenser, detarrer, &c. An additional Holmes-Connersville exhauster, 3.6 mill. cu.ft. per day, is being installed together with a 3 mill. Holmes-Connersville meter for measuring crude water gas.

Purifier Installation:—This installation, by Clapham Brothers, Ltd., comprises eight boxes 45 ft. sq. × 6 ft. deep with connections arranged so that they can be worked as two sets of four. The boxes are elevated and equipped with mobile oxide elevator feeding band conveyor fixed to travelling lid lifting crane.

Benzole Washer:—A Newton Chambers benzole washer capable of dealing with 6 mill. cu.ft. of gas per day is being erected at the outlet purifiers.

Station Meters:—Two 6 mill. cu.ft. per day Holmes-Connersville machines.

Gasholders:—Two existing column guided holders are being replaced by two four-lift spiral holders in existing tanks. This work is being carried out by Clayton Son & Co., Ltd. The capacity of the new holders will be 2.85 mill. cu ft., and 1.97 mill. cu.ft. respectively.

Compressors and High Pressure Main:—Two electrically-driven machines by George Waller & Sons, Ltd. One will have a capacity of 100,000 cu.ft. per hour and the other 50,000 cu.ft. per hour. They will work initially at 7 lb./sq. in. outlet pressure but are designed to work up to 30 lb./sq. in. These machines will feed a ring main which is being laid around the outskirts of the city with feeders into the existing system.

Foundations:—The foundations in connection with the carbonising and coke handling plants and the purifier installation are being installed by contractors, but those for the remainder of the plant have been done by direct labour.

Progress of Work

Like similar schemes most of the work is running behind schedule, through the usual causes. The C.W.G. plant has only recently commenced gas-making, when it should have been in operation over four months ago. Certain difficulties have arisen in regard to the foundations for the carbonising plant. Most of the area covered by this works is undermined by disused coal workings, the presence of which necessitate special considerations. In this case, due to the abnormally heavy loads on the stanchions trial borings were taken, and acting on the information obtained it was decided to pile the whole area, about 210 piles being used. Another difficulty which arose was that during excavations and piling an old brick invert sewer was discovered when the area was flooded. After several tests were carried out it was decided to divert the sewer outside the works, and lay a fresh drain to deal with the works drainage. This foundation work is now proceeding satisfactorily, and the first half of the plant is expected to be gas-making by August, 1951, and the second half by early 1952. It is anticipated that all the ancillary plant and machinery will be ready by these dates.

Conditions of Gasworks Plant Generally

Part of my duties recently has been that of paying visits to gasworks for the purpose of making a general survey of the plant and machinery, &c., and I have so far inspected some 34 works. I have been impressed by the large amount of old plant which is still working, if not efficiently, nevertheless still working. In this category there are units of ancillary plant up to 80 years old, most of which are in urgent need of replacement.

Here I would like to emphasise the importance of cleanliness and the use of paint which, I can say from personal observations, go side by side. If a piece of plant has been well painted it is usually found to have been kept clean and in good repair. It has been my misfortune to have seen comparatively new plant in dirty and rusty condition. Regularly painted plant and property usually tends to the general tidiness of a works. In this connection I would commend to your notice the motto of a well-known gas engineer, which goes something like this: 'Anything on the works should comply with one of three conditions—*viz.*: (i) To be in use; (ii) to be on site ready for being put into use; or (iii) to be in the stores.'

I expect to hear some works managers say that it is impossible with present-day labour to keep a works clean and tidy; and while I agree that it appears to be difficult, it is a fact that it is being done, admittedly in varying degrees on some works.

It may be felt by some that a particular works does not lend itself to tidiness, but from personal observation I have seen some small works which seem to be able to find accommodation for an incredible amount of scrap and rubbish.

One of the most effective contributions to tidiness is the provision of good works roads and concreted or paved areas. Such things as a disused casting, an odd piece of pipe, or an old chute are most obvious if they are left lying on a concreted area, but if left on an open space which is unmade or has been made up with ashes, &c., with probably pools of water in wet weather, then it is easy for this scrap material to pass unnoticed.

Other effective aids to cleanliness are the better lighting, both natural and artificial, of all works buildings and the frequent cleaning of all windows and rooflights. In designing new buildings care should be taken to provide access to the windows for the purpose of cleaning.

The time will come when the industry will need to use all the means at its disposal in selling its wares.

Some may object to having an all gas-heated house on the assumption that it is expensive to run. I give herewith figures

(*Continued on p. 58.*)

A NEW DESIGN OF HIGH TEMPERATURE NATURAL DRAUGHT FURNACE*

By R. F. HAYMAN, B.Sc., F.R.I.C., M.Inst.Gas E., A.M.I.Chem.E.
(Watson House, North Thames Gas Board)

A HIGH temperature zone can be attained in a variety of ways, two major methods being the use of air blast burners and natural draught low pressure gas. The former is of value in industrial operations where high heat input is required, *e.g.*, successive melting of charges of metal. In these circumstances compressors or blowers for an air supply are usually available and a certain amount of noise can be tolerated since other steps in the process may, in any case, be noisier. Where undue noise is undesirable, for instance in a research laboratory, then natural draught low pressure gas is necessary.

Here, the problem can be considered from two viewpoints. A famous organisation like the National Physical Laboratory may require a high temperature and this, because of the importance of the problem, may be by far the dominating factor. Then, apart from economic considerations, it may not matter if the furnace takes a week to heat up providing the result is, say, a uniform and accurately controlled temperature.

On the other hand, workers in the fields of metallurgy, ceramics, atomic energy, or other sciences may still need the same high temperature but with the important difference that they need an operation in one shift or one day. Thus, a muffle furnace of appreciable size may require to be heated up to 1,450°C. in about four hours, used, and then turned out to cool overnight.

The design of a quick heating-up furnace is entirely different from a slow heating-up furnace. There are many refractories

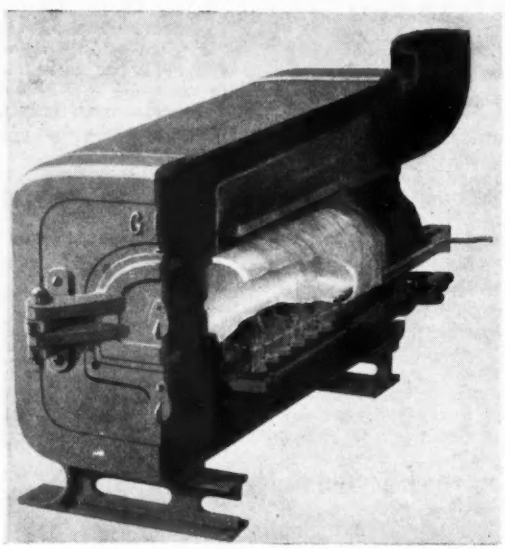


Fig. 1.—G.L.C. Muffle furnace, type B.

of high thermal capacity which will stand high temperatures with ease, as those who have experience of carbonising or steel works will know. There are not as many refractories, however, which possess a low thermal conductivity, low heat capacity and, therefore, ability to heat up quickly, together with a high resistance to the strains set up by rapid cooling. The last is a point that is often overlooked because the furnace under discussion will cool down nearly as quickly as it heats up.

The purpose of this paper is to describe the design of a furnace to fulfil the last-named requirement. Experience has shown that this is one of the most difficult problems to overcome. There is, however, undoubtedly a demand for such a furnace. The starting point was the well-known range of G.L.C. furnaces of the 'B' type, that is, designed to operate at a maximum temperature of 1,250°C. Fig. 1 shows a pictorial strip drawing of the 'B' type.

The original design employed a burner with heat resisting steel nozzles firing into a combustion chamber made of fireclay insulating materials which extended to the outer edge

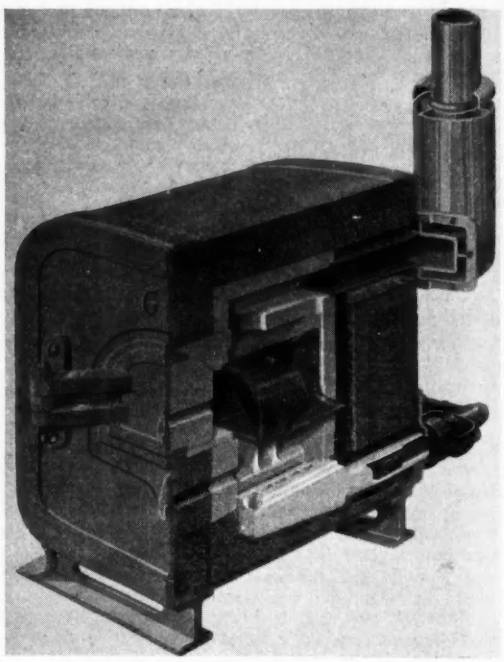


Fig. 2.—G.L.C. Muffle furnace, size 3 for 1,450°C.

only, one course of bricks being used. The muffle was of silicon carbide. A subsequent modification was the substitution of refractory nozzles for heat resisting steel as shown in Fig. 1.

The original requirement was to produce a furnace of equivalent size to the G.L.C. range with a maximum temperature of 1,350°C. to be attained in three hours. Elevating the maximum temperature from 1,250 to 1,350°C. or more is not merely a matter of increasing the gas rate, a method, the fallacy of which dies hard. At these temperatures heat resisting steel only survives for a short while and some fireclay insulating bricks melt or disintegrate.

The objective of fulfilling the requirements without any increase in gas consumption compared with the 'B' type furnace suggested recuperation as one modification; the other important modification was the provision of superior insulation.

This is only a short paper and it will be necessary to pass over the many interim stages and problems, not the least of which was the provision of insulating refractory bricks of the required quality since the production of such bricks is really only just beginning.

* Short paper presented to the London and Southern Junior Gas Association, March 10, 1950.

Thanks to the help of the makers of the refractory bricks and muffles and to the fundamental work of the British Ceramic Research Association, we can now say that the objective has been attained and a furnace has been made in which a maximum temperature of 1,450°C. can easily be reached.

This furnace, the first design of which is shown in Fig. 2, has a simple heat-resisting, cast iron recuperator which, with a silicon carbide box as a heat exchanger, succeeds in raising the secondary air temperature at the burner to about 600°C. A high quality aluminous insulating refractory brick is backed with fireclay insulating refractory and an outer course of diatomaceous bricks.

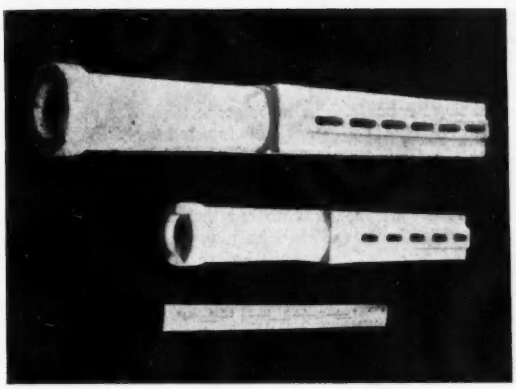


Fig. 3.

The problem of a suitable burner at the high temperature prevailing has already been mentioned. All-refractory burners have been developed successfully, one of which is seen in Fig. 3. The larger burner is for the No. 5 size furnace, the smaller for the No. 3 size. The material is alumina refractory which so far seems to be standing up to the arduous conditions, one of which is that the top surface of the burner is exposed to direct radiation from the combustion chamber, which must attain a temperature of at least 1,500°C.

It is possible the design may have to be modified to reduce the thickness of the sections wherever possible and minimise cracking.

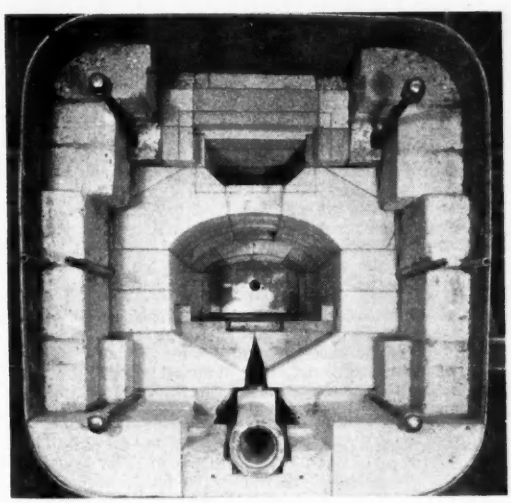


Fig. 4.

Fig. 4 shows a stage in the construction of the No. 5 size prototype. It is apparent from this picture that a tribute must be paid to the craftsmanship in such work because a badly made joint increases the heat losses through the brick courses and may vitiate the test results. In production, moulded sections would be used where possible, but this is not economical or practical in the development stages.

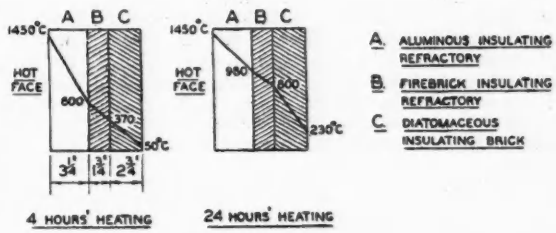


Fig. 5.

Performance

It was decided to concentrate on the No. 3 and 5 sizes of the G.L.C. furnace range and Table I gives details of the dimensions.

TABLE I.

Size	Furnace Maximum temperature °C.	Overall dimensions Width ft. in.	Height ft. in.	Depth ft. in.	Muffle size—internal Width in.	Height in.	Depth in.
3	1,250	1 7	1 9	2 1	5	3½	8
3	1,450	2 0	2 3	2 7			
5	1,250	2 3	2 6	2 11	9	5½	12
5	1,450	2 4	2 10	3 4			

Table II gives comparative performance of the 'B' range at 1,250°C. and the high temperature furnace at 1,450°C.

TABLE II.

Size	Furnace Maximum temperature °C.	Gas rate cu.ft./hr.	Approximate time to reach 1,250° C. hr. min.	Approximate time to reach 1,450° C. hr. min.	Approximate gas rate to maintain 1,250° C. cu.ft./hr.	Approximate gas rate to maintain 1,450° C. cu.ft./hr.
3	1,250	100	1 30	—	90	—
3	1,450	80	1 15	3 50	45	60
5	1,250	220	1 50	—	195	—
5	1,450	140	1 50	4 0	75	85

The figures in Table II illustrate two important points.

i. In spite of an overall increase in size of the high temperature furnace, the heating up rate compared with the 'B' range has been maintained with a considerable reduction in initial gas rate. This is due to superior insulation.

ii. Whereas in the 'B' range the gas rate for maintenance at 1,250°C. is about 90% of the full-on rate, in the high temperature furnace it is only about 50% of the full-on rate. This is due to a combination of the necessary superior insulation and air preheating.

A lack of design data on high temperature furnaces limited progress in the past. There is a conspicuous lack of information in the published figures for thermal conductivity which, at the moment, are quoted only for a mean temperature of 500°C. The work of the British Ceramic Research Association[1] and the British Refractories Research Association before it, has shown that thermal conductivities change with increasing temperature (the thermal conductivities of some materials diminish with increasing temperature, but, in general, the thermal conductivities of high alumina materials increase).

Work on the influence of the pore size on thermal conductivity[2] also, together with the above, suggests that the thermal conductivity of the high alumina insulating refractory bricks in use will be approximately doubled at a mean temperature of 1,200°C.

The need for fundamental figures at this temperature and above has been repeatedly stressed, and it is very gratifying to see the excellent work of the B.C.R.A. in extending the range of measurement of the existing apparatus for thermal conductivity determinations.

The measurement of the temperature between the courses of the high temperature furnace has been carried out and for the first time, it is believed, such figures are being reported.

Fig. 5 shows the temperature after four hours' heating on the left and after 24 hours' soaking on the right. It will be seen from the curve on the right that the mean temperature of the insulating refractory brick is about 1,215°C., and the striking effect of insulating refractory bricks as heat insulators is seen in the left hand curve, where the hot face temperature is already up to 1,450°C., but the temperature of the outer face has only just begun to increase.

The Future

It is hoped that this furnace will be the last of its kind to be designed by a combination of experience and intuition. The ideal is to be able to design a furnace from fundamental information. Studies of two-dimensional flow in a model of the furnace described above have given promise of substantial improvements and there is not the slightest justification for assuming that the limit of temperature or performance has been reached for low pressurenatural draught town gas-fired furnaces. In fact, recent developments open the way to a completely different outlook on furnace design and one which we hope to pursue with vigour.

REFERENCES

1. Clements, J. F., Vyse, J., Rigby, G. R., 39th Report of Refractory Materials Joint Committee, 1947-48. Gas Research Board Comm. 41, p. 54.

2. Clements, J. F., Vyse, J., Rigby, G. R., 38th Report of Refractory Materials Joint Committee, 1946-47. Gas Research Board Comm. 32, p. 46.

3. Clements, J. F., Vyse, J., Rigby, G. R., 40th Report of Refractory Materials Joint Committee, 1948-49. Gas Research Board Comm. 53, p. 35.

THE NORTH EASTERN AREA — continued from p. 53.

based on actual costs obtained over a period of five years. The figures relate to two houses, each of which is one of a semi-detached pair, separated only by another pair and consequently being subject to the same climatic conditions. Each house has a similar aspect and is identical in every way, the rateable value in each case being £18.

The family in each instance consists of two adults and one child, all of similar comparative ages, and having similar habits and customs. I think that it will be agreed that these circumstances should give us as fair a comparison as is possible.

I will refer to the houses as Case A and Case B. Case A being the one using no open coal fire.

Appliances Used :—

Case A : Dining room, gas fire ; drawing room, gas fire ; kitchen, gas cooker and gash washer; bedrooms, two gas fires; bathroom, gas immersion heater ; hall, portable gas radiator (used also in kitchen); electric vacuum, wireless, and iron.

Case B : Dining room, coal fire ; drawing room, coal fire ; kitchen, gas cooker and electric washer ; bedrooms, coal fire and electric radiators ; bathroom, electric immersion heater ; electric vacuum, wireless, and iron.

The figures given are actual costs, discounts having been allowed for.

Case A

Year	Gas	Electricity	Total
	£ s. d.	£ s. d.	£ s. d.
1945 ...	14 14 8	4 6 7	19 1 3
1946 ...	16 6 4	4 12 0	20 8 4
1947 ...	15 7 2	4 12 10	20 0 0
1948 ...	16 1 3	4 13 3	20 14 6
1949 ...	17 16 4	4 11 11	22 8 3
Totals ...	£80 5 9	£22 16 7	£103 2 4

Case B

Year	Coal	Electricity	Gas	Total
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1945 ...	7 4 7	6 18 2	4 7 3	18 10 0
1946 ...	8 16 10	6 15 0	4 11 6	20 3 4
1947 ...	9 11 4	7 2 2	4 17 2	21 10 8
1948 ...	10 5 6	7 0 6	5 2 4	22 8 4
1949 ...	10 3 10	7 1 4	5 16 10	23 2 0
Totals ...	£46 2 1	£34 17 2	£24 15 1	£105 14 4

It will be seen that there is not a great deal of difference in the cost of the two systems, but it must be pointed out that in Case B the coal ration consisted of what the coalman had to offer, and as a matter of fact it was not all Grade 1 coal, the average cost working out at something less than 3s. 9d. per cwt.

It should also be stated that during the cold spells which occurred in the five years under review the coal ration was augmented by logs, coke, and an oil stove. Also to the figures in Case B should be added the costs of wood, firelighters, and chimney sweep, not to mention decorator's bills. As for additional labour this is not usually valued in £ s. d. and can only be realised when seen in the form of so much per hour on an account.

In the days immediately prior to vesting day a number of people were apprehensive as to the possible trend of affairs. So far as I can see most of these fears are being proved groundless, as there appears to be more scope than ever before for the technically-trained personnel of the industry. Never before have there been such opportunities for young men ; but I would like to offer a word of advice to some of the junior members of the profession. While it is admirable to be ambitious it must be remembered that a technician, however highly academically qualified he may be, does need a certain amount of practical experience before advancing to the higher paid posts.

I am convinced that when various difficulties and anomalies have been ironed out, and things settle down, there can be no reason for anything but optimism regarding the future success of the gas industry.

CENTRALISED DOMESTIC HOT WATER

The Council for Codes of Practice for Buildings has now issued, in final form, Code 342, 'Centralised domestic hot water supply.' This code was previously issued as a draft for comment, and has now been revised, in the light of comments received, by a joint committee convened by the Institution of Mechanical Engineers and the Institution of Heating and Ventilating Engineers.

The Code comprises a head-code and six sub-codes incorporated in one document, the sub-codes having the following titles : Boilers, Calorifiers, Storage Vessels, Pipework, Electrically-driven Circulators, Thermal Insulation. The head-code, 342, deals with the central hot water supply in general, while the sub-codes cover in detail the subjects indicated in their titles. Each sub-code includes a list of the relevant British Standards, and cross references to the head-code and to other sub-codes are inserted wherever appropriate.

The code gives guidance, at all stages, on the setting up, and the maintaining in good order, of installations to provide hot water for domestic use in buildings ranging from small dwelling-houses to hotels and schools. In drafting the code, the committee has assumed : (a) That the design of a central system of domestic hot-water supply will be entrusted to a fully qualified engineer, who will assure himself that 'balance' is maintained in the system ; and (b) that the execution of the work will be carried out under qualified supervision.

The code carries the usual warning that during the present abnormal conditions it may not be practicable to take full advantage of all the recommendations made.

Copies of the code may be obtained from the British Standards Institution, 24-28, Victoria Street, London, S.W.1, price 8s., post free, reference CP 342 (1950).

A booklet describing a new system of fluid level control has been published by **Elcontrol, Ltd.,** 10, Wyndham Place, London, W.1. Designed to replace float switches, pressure bulbs, timers, and pneumatic and magnetic float devices, this system facilitates the automatic operation of pumps, valves, heaters, alarms, and air compressors in accordance with the level or change in level of fluids.

RADIATION LIMITED

Annual General Meeting : Speech of HAROLD HARTLEY, D.Sc. (Chairman)

AT the Annual Meeting of Radiation Ltd., held at the Chartered Insurance Institute Hall, 20, Aldermanbury, London, E.C 2, on March 30, 1950, the Chairman, Dr. Harold Hartley, said:—

The trading profit of the Group for the year amounts to £1,091,753, and that after adding investment and sundry income and providing for depreciation, Directors' remuneration, pension payments, &c., the net profit for the year is £914,991, an increase of £70,592, *i.e.*, 8½%, over the figure for the preceding year. After deducting £482,900, reserved for taxation, and £546, representing a minority shareholders' interest in the profits of an overseas company, there remains a net group profit of £431,545, which compares with £382,931 for the preceding year.

The liquid resources of the Group as shown by its current assets comprising stock, debtors, investments and cash, totalled £6,145,444. At the same date the current liabilities and provisions were £1,390,602, so that the excess of current assets over liabilities and provisions was £4,754,842.

The trading results for the last three years would have justified an additional payment on the issued Ordinary capital of the 2½% necessary to bring the Ordinary dividend back to the pre-war figure. The working capital, £5,828,943, provided by the stockholders concerned is fully 2½ times their nominal holding. One-seventh of their dividend, also, is obtained from investment income, so that the return from production margins would still be very modest were the dividend increased. The dividends paid should be related to the working capital employed and not to the share capital which may have little relation to the former. It is desirable that the stockholders and the public should understand these figures. In some quarters the suggestion has been made that shareholders in industrial concerns receive a disproportionate reward. Such comment is not factual so far as this Company is concerned, and as has been said elsewhere the industrialist to-day is almost alone in being afforded no recognition of the depreciation in currency since before the war. It is hoped that successful operation of the Group will continue and permit of an increased payment to the Ordinary stockholder as soon as national conditions allow.

Under the Gas Act, 1948, the gas supply industry in Great Britain was transferred to public ownership on May 1, 1949. One effect of the transfer is that over a thousand gas undertakings which were potential purchasers of gas apparatus are replaced by twelve area boards. This change in control must have a marked effect on appliance manufacturers with major interests in the gas industry, and steps have been taken to adapt the methods of operation of the Radiation Group.

Manufacturing Progress, Costs and Prices

It is a costly matter to make a large number of types of apparatus in varying weekly quantities in the one factory, so it was decided at the beginning of 1949 to change the manufacturing arrangements and to effect specialisation in production by decreasing the number of variants made.

As a first step in the re-organisation it was arranged that the relevant plant at the Grappenhall Works, Warrington, should be used solely for the production of a new domestic gas cooker. This appliance, of advanced design and robust construction, is intended for the low-cost market and for housing schemes. Production was started in May last and, in anticipation of substantial orders, low prices were quoted. Contracts have been concluded with area boards which should keep the operatives lucratively employed.

As a production unit is made more effective the flow of parts becomes more regular and the piece-work "opportunity hours" of the operatives increase. This leads to higher earnings, and a greater sense of satisfaction with the job, yet at the same time costs of manufacture decrease.

Largely as a result of this specialisation improvements in production followed to such an extent that the works costs became even lower than had been anticipated. Your Directors desire, as a matter of sound ethics and sound economics, to maintain a large turnover at a small rate of profit. Towards the end of last year, therefore, the area boards were advised that the prices of the cookers would be reduced further by about 12½% from January 1, 1950. It will be clear, however, that this condition can only continue so long as the necessary supplies of steel and other essential raw materials are obtainable, and there are no undue increases in wage rates or material costs.

The prices now charged do not exceed by more than 50% the prices which would have been charged in 1938. In general, cooker prices are from 90% to 100% above pre-war figures, although there has been no increase since February, 1947, despite the rises in wage rates and costs of material and plant since that date.

In regard to prices generally, every effort must be made to get these lower so as to increase the real value of wages. If further economies can be effected in manufacturing costs which again will allow of price reductions, then these will be made. The greater part of the gas output of the gas industry is taken by domestic consumers, the majority of whom are in the lower income groups, and it is desired especially that this section of the community, for whom these cookers are primarily needed, shall reap benefits from production economies.

With these appliances it is possible to save some 15% to 20% of gas when compared with the best cookers available in 1938-39, and when they are used to replace some of the very old cookers still in existence economies up to, perhaps, 50% in the gas used may be expected.

During 1949 the Radiation Group made some 30% more gas cookers than in 1948. The domestic cooker represents, however, only a portion of the goods manufactured, even for the gas industry, and the burden of purchase tax on space-heating and water-heating equipment has been responsible again for reduced demand for these types of gas-using apparatus. In the earlier part of the year, also, there was a decrease in the demand for solid-fuel appliances. Nevertheless, the total value in pounds sterling of sales in 1949 was some 11% higher than in 1948 and constitutes a record.

Sales Organisation

Since the war there has been little opportunity of re-measuring the efficacy of the main sales organisation. In the past each of the subsidiary companies maintained its own staff, selling a wide range of gas appliances, some of which were manufactured in other factories of the Group. The selling activities of the subsidiary companies were co-ordinated by a central organisation. In view of the changes in production policy mentioned already, and in the method of working of the gas supply industry it was felt desirable to review the sales organisation. As specialisation in manufacture is effected at the different works it becomes unnecessary for each of the subsidiary companies to maintain its own sales section. It was decided, therefore, towards the end of 1949 to register a new selling company, to which has been given the name 'Radiation Group Sales, Ltd.,' and to unify the control of the selling arrangements for domestic gas appliances from the beginning of 1950.

The new organisation, which is based on the geographical divisions of the country selected for the nationalised industry, is providing a better service for the area boards, and, through them, for the users of Radiation appliances. There has been an appreciable simplification of the internal working which has resulted in economy, and it is proposed to introduce unified selling arrangements in other fields as and when specialisation in manufacture is effected.

Export

The export results obtained this year have not been as satisfactory as those recorded 12 months ago. This is due solely to a falling off in demand in one section of the business consequent upon the withholding of import permits by one of the Dominions.

Further thought has been given to the question of dollar earnings. A review of the position has led to the conclusion that it is not practicable at present to compete effectively in America itself with American gas appliance manufacturers. The demand of the American home market would not appear now to be equal to the productive capacity of its appliance industry, nor will it be so after allowing for the 20% increase anticipated there in 1950.

New apparatus designed especially to satisfy the needs of both the home and export markets is being prepared for production. Specialists from abroad have expressed the opinion that what it is proposed to make has much to offer, both from

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the technical and constructional points of view, which is not available in apparatus of foreign make, with which it will be necessary to compete. It is essential, however, if more sales are to be effected abroad, even following the devaluation of the pound, that a good home demand shall be created otherwise production costs will be too high.

During the past year technicians have been sent to both the Eastern and Western hemispheres and insofar as possible the export sales will be increased.

Research and Development

The relations which exist between technicians in the different sections of the gas industry are cordial, due in no small measure to the facilities provided by the Institution of Gas Engineers. There is a good deal of co-operative work, not only among staffs of the gas undertakings, but also among those employed by firms who are trade competitors, and as this is concerned largely with background work and standards of performance, it does not eliminate the spur which competition provides in appliance manufacture. It is hoped that such co-operative work throughout the whole of the gas industry may be increased.

The technical standards attained in gas appliance design and manufacture are high. It is intended to extend the activities of the research and development sections and to allocate increasing sums annually for the work.

General Organisation

Production is today the most important activity of the organisation, as it is the most vital activity of the nation as a whole. The policy must be directed to the end of ensuring that manufacturing is done most effectively and that the best service is provided for the community.

The report and accounts were adopted and a final dividend of 7½% per annum, less income tax, on the Ordinary stock, making, with the interim dividend of 5%, a total dividend of 12½% for the year, was approved.

Gas Undertakings' Results

Colonial Gas Association

At a recent meeting of the Directors an interim Ordinary dividend of 5%, less tax and deduction for rate of exchange, was declared for the half year ended December 31, 1949.

Maryborough Gas and Coke Company (Queensland)

Gas sales show a considerable increase over 1948, but expenditure has also risen. The Directors' report says that during the past nine years the increase in the output of gas has been phenomenal, the figures showing over 100% increase during the period. Existing carbonising plant is now almost up to its full capacity, and the installation of a complete new plant is under consideration. A final dividend of 5% has been declared, leaving £869 to be carried forward, compared with £218 brought in from the previous year.

Stourbridge

The report and accounts of the Stourbridge Gas Department for the one month between the end of the financial year 1948-49 and vesting date are in the usual form. Mr. S. J. D. Williams, Engineer and Manager, records that cash balances were transferred to the West Midlands Gas Board on May 1, 1949, amounting to £40,078. Part of these balances were in respect of sinking fund and should have been retained by the Corporation, the amount due to the Corporation being £1,102. The sinking fund on April 30, 1949, amounted to £4,646.

Wisbech Lighting Company

The final meeting of the Wisbech Lighting Company was held on March 20, when the stockholders' accounts dealing with payment of final dividends were approved and thanks expressed to Mr. F. G. A. Cooper, stockholders' representative, and Mr. J. Green, former Managing Director. The dividends paid to stockholders for the four months, January 1 to April 30, 1949, were at maximum rate allowable—16% per annum on the Ordinary stock, 13% per annum on the Ordinary shares, and at the fixed rate on the 6% Preference shares and 4½% Debenture stock.

Auckland Gas Company (New Zealand)

Profit for the year ended December 31, 1949, after deducting working expenses, rates and land tax, depreciation and other charges, amounted to £57,282, against £27,527 for the previous year. Payment of dividend at the rate of 4% for the year leaves a balance of £15,230, against £12,178 brought in.

Further Gas Valuations

The following list of gas valuations, issued by the Ministry of Fuel and Power on March 24, contains 29 securities of 21 companies. With these the total now valued is raised to 1,701 out of 1,951, approximately £173½ mill. of Gas stock having been issued to date. This list is the last under which automatic conversion will take place until after May 1.

Company	Compensation Value
Aberfeldy Ord. (£1 unit)	58/-
Ashton Ord. (£30 unit)	£90
Auchterarder Ord. (£1 unit)	37/-
Bridgend 10% Max. Ord. (£1 unit) ...	32/-
Do. 7% Max. Ord. (£1 unit) ...	28/-
Bridge of Weir Ord. (£1 unit) ...	26/-
Dalry Ord. (£10 10s.)	£30
Dunlop Ord. (£1 unit)	17/6
Dunning Ord. (£1 unit)	20/-
Garw and Ogmore 6% Red Deb. ...	£100
Helmsley Ord. (£1 unit)	20/-
Honiton 4% Deb. (before January 1, 1946) (£100)	£100
Do. 4% Pref. (£10 unit)	£10/2/-
Do. Ord. (£10 unit)	£15/10/-
Kelty 4% Red. Deb. (£100)	£101/10/-
Do. 3% Red. Deb. (1957) (issued 1947) (£100)	£100*
Do. Ord. (£1 unit)	26/-
Machynlleth Ord. (£5 unit)	£5
Neilston Ord. (£1 unit)	55/-
New Cumnock 5% Cum. (£1 unit) ...	22/-
Do. Ord. (£1 unit)	42/6
Newton-Stewart Ord. (£2 unit) ...	£2/10/-
Pontardulais Ord. (£1 unit)	14/-
Romsey Ord. (£10 unit)	£24
Do. Ord. (£5 unit)	£12
Upton-on-Severn Ord. (£5 unit, £4 paid)	£1/12/-
Wellington (Salop) (4% Red. Pref. (1967) (£100)	£102
Wilmslow and Alderley Edge Orig. (£10 unit)	£23
Do. New (£10 unit)	£16

* The value of these securities has been determined by reference to the price of issue in accordance with Section 25 (6) of the Act.